The
GEOGRAPHICAL JOURNAL

Vol CII No 4 R.G.S. October 1943

PHYSICAL NAMES FOR THE MAP OF BRITAIN

Discussion at the Afternoon Meeting of the Society, 18 October 1943

IN opening the Discussion the PRESIDENT (The Rt. Hon. Sir GEORGE CLERK) said: The Ministry of Town and Country Planning are producing a series of maps on the scale of 1 : 625,000, about 10 miles to the inch, to show the distributions of population, industries, resources; and they want to add to this series a Physical Map of Great Britain showing the names of natural features only. Dr. Willatts is the Maps Officer of the Ministry and has already published in the *Journal* for July a note on the principles and a tentative list of names for discussion this afternoon. Many geographers have received from him the draft of the map and have sent criticisms and suggestions either to him or to the Secretary of the Society.

The principal question for discussion seems to be: Shall the map contain only names in regular use, or shall it be allowed to propose names which are not in use but seem likely to be useful? One might consider that Ordnance Survey maps should show only names which are well recognized and in actual use; but that this special map might be used to try out a limited number of names proposed, not yet in general use, and which would not be shown on the general run of British maps. Otherwise one should probably look with suspicion upon invented names and must at any rate take care that they have an authentic flavour. Although this is a matter of opinion, if I may express a humble opinion of my own I should be glad to see avoided such a word as District, for which I do not care very much, and possibly also a word which at first sound appears suitable but really is not, Upland or Uplands. I do not think such words have any traditional use; in fact, I think I am right in saying that Upland is not to be found in the Concise Oxford Dictionary.

Forty years ago a small Committee of the Society made certain proposals for nomenclature of the larger regions of England and Wales and published a map in the *Journal* for December 1904. Two of the three members, Sir Halford Mackinder and Dr. H. R. Mill, survive, and though they cannot be present, have made suggestions and criticisms.

Town and Country Planning in Scotland is under the Department of Health for Scotland and has a Maps Officer of its own, and a Committee of Scottish geographers and cartographers have sent us an important memoran-

dum on the names of physical features in Scotland, of which Dr. Willatts will no doubt give us a summary.

Dr. E. C. WILLATTS: As explained in the short article in the July number of the *Journal*, the question of the nomenclature of the features shown on a physical map of Britain was raised by the decision to include a new physical map in the series, on the 1 : 625,000 scale, which the Ordnance Survey is preparing for the Ministry of Town and Country Planning. This proposed physical map, which carries the new National Metric Grid, will show contours at 50, 100, 200, 300, 400, 500, 600, and 700 metres, with layer tints at each 100 metres. Rivers and lakes and their names will be in blue, as will be submarine contours, and the sea will be tinted blue. While there have been physical maps of this country on other, chiefly smaller, scales, there has not, apparently, been a purely physical map on this useful scale, showing the natural features and their names, but without the detail of man-made features which on other maps in the series, but not on this one, will constitute the standard underprint.

When preliminary work commenced on this map at the Ordnance Survey about a year ago, in my capacity as Maps Officer to the Ministry I saw the work in hand, and raised with the then Director-General, Major-General MacLeod, the subject of what names should be included and the basis for their selection. After some discussion it was felt that there were no completely satisfactory precedents on which to base decisions, for while a very good map existed on a scale of 1 : 1,000,000, some of the names it bears are admittedly open to question, and the difference in scale allows of a larger number being written on the new map. It was therefore left to me, under the general guidance of the Maps Committee of the Ministry, to make enquiries among geographers and others in order that proper consideration might be given to the subject. It seemed that an exceptional opportunity had presented itself to review current practice in the naming of our physical features; to collect information about the names commonly used, and to offer appropriate suggestions to the Ordnance Survey. I should make it quite clear that there is no question of my Ministry's setting out to act as an arbiter in the matter. It is not for me or the Ministry to decide what physical or similar names should go on an official map for which the Director-General of the Ordnance Survey is responsible. He, quite properly, must decide on such matters, but if he is willing to heed the opinions of geographers and other map users on the subject, we, especially in this Society, should come forward and humbly offer our considered opinions.

I have sought the views of leading geographers in the majority of our universities and had conversations with those great pioneers of modern geography, Dr. H. R. Mill and Sir Halford Mackinder, who had worked on this same subject forty years ago with the late Dr. G. G. Chisholm. I also consulted a selection of other maps by various publishers and looked through the works of some well-informed countrymen who wrote before the days of modern maps. Of these, Michael Drayton is perhaps more interesting than helpful, but the writers on agriculture in the middle of the last century, having, perforce, to refer clearly to our physical features, have frequently left us a valuable and unbiased record of the names employed before the Ordnance

Survey began to make small-scale maps. Lastly, Major-General Cheetham, D.G.O.S., kindly allowed me to see the file containing varied suggestions put forward in 1931 by University Geography Departments in connection with a proposal for the improvement of the 1/M map, which however owing to the economies of that time, was not pursued. Then, at the invitation of the Society, I wrote the note in the July number of the *Journal*, which briefly summarizes some of the more important points and suggestions which arose from the preliminary investigations. The invitation in that article to those interested to put forward their proposals has brought me some interesting correspondence, including some very helpful suggestions. There has, of course, been the inevitable tendency on the part of some, especially those whose interests and knowledge are more local than national, to hold me personally responsible for all the omissions and inclusions in the list of names, whereas, as stated, it was given in order to provoke constructive criticism, and represents a selection of the views of those whom I had consulted, and for whose cooperation I would like to express gratitude.[1]

Few of the correspondents so far have discussed the principles on which our name-plate should be constructed, but there were one or two noteworthy exceptions, of whom Mr. Fairgrieve, writing with a wealth of teaching experience, is the chief. I think all are agreed that the names of all hill or mountain ranges should be included, but there is considerable disagreement about passes. Mr. Fairgrieve is in favour of their widespread inclusion, and others ask for a few. My own view is that in general this is not the scale for them. I think that on a physical map the gaps are fairly obvious. If, in addition, there is a combined physical and topographic map (and it is intended that there shall be one in the series) the routes traversing the passes are shown and serve to emphasize their significance. On larger scales they might well be named. But apart from overloading the map with names, one of the great difficulties about passes, defiles, gaps, and gates is that there is a real danger of putting on a large number which are mere geographers' labels. The O.S. 1/M map names only two of the Scottish passes, the famous ones of Brander and Killiecrankie. The claims of Glencoe and Drummochter have been urged by several correspondents and are probably worth considering. In England the 1/M map shows a disproportionately large number in the North and South Downs and Chilterns, but few elsewhere, and none in Wales. If we take the safe rule that only names in local use are to be used, few of these would, I think, qualify, and many that have been put forward, such as Northallerton Gate, would be summarily rejected.

Summit names constitute a problem in themselves. A few Fellows have suggested they should not be shown. But our physical map should at least attempt to satisfy the reader who seeks to identify the chief points about which he hears and reads, and it would be wise to include a selection. I think we might recommend the O.S. to indicate their positions by spot heights, perhaps with the elevations in feet. Which summits are to be named I leave to

[1] There were a few slips on the original list in the July *Journal*, of which it may be helpful to record the following: Ben More Coriach should read Corigach; Strath Findhorn, Strath Deare; and Ben Cleugh, Bencleugh; the following were accidentally omitted: Vale of Menteath, Appin, Strath Tay.

others to argue, but no one has yet disputed the principles I gave for their selection.

On the subject of valley names much will doubtless be said before a decision is reached. Remembering that the rivers that flow through valleys, and their names, will appear (in blue) on the map, we should be duly cautious of repeating a river name merely in order to stress the self-evident fact of the existence of a valley. Thus, I suggest that such names as Thames Valley, or even Upper and Lower Thames Valley, are unnecessary. But we should certainly include the names of vales which do not derive from the river name such as those of Evesham, Aylesbury, Wensleydale, White Horse, and Taunton (not the tautological Vale of Taunton Deane). We should, too, consider very favourably the inclusion of the names of straths, glens, and dales which are well used and which frequently only apply to part of the valley of the river after which they are named. Thus, there is a good case for the Yorkshire Dales. The case of the Clyde Valley is a nice one: here three names are put forward, each for a different stretch of the valley, Clydesdale, Strathclyde, and Clydeside.

Lowland names are a sure source of controversy. Mr. Fairgrieve has suggested that if the chief physical features are to be shown, then lowlands, as chief physical features, should be named. I would dispute this. For one thing, it is begging the question as to whether we shall be able to find names for all our positive relief features; there are not a few hill areas, especially in Wales, for which there seem to be no agreed names. But more important, it would lead either to a spate of geographers' labels, which should, I think, be eschewed, or to an attempt to overcrowd the map with *pays* names varying from those which are in common usage to rusty resuscitations. (I think that, as another enterprise altogether, geographers might address their minds to the problem of constructing a *pays* map of this country.) But I still feel very strongly that "except where there is a high degree of regional consciousness in a lowland, which has helped to keep in use a distinct name for the area, it seems pointless to detract from the clarity of the map by adding names which may be mere geographers' labels."

Such labels however may sometimes gain acceptance. Geographers and others have from time to time within the last century suggested some quite happy titles for otherwise nameless features. A good example is Geikie's suggestion, in 1865, of Southern Uplands, for the high land in south Scotland which is not part of the Highlands of Scotland. Forest Ridges, an apt name for the dissected higher land of the Weald (originally proposed, I believe, by Mill and Mackinder), has been adopted by the Ordnance Survey. I think the time has come when the Survey should be invited to use another invented name, Snowdonia. We need a name to describe the district surrounding the highest mountain in the Southern Kingdom, and the term, which has been increasingly employed since at least 1869, when Mackintosh used it in his work on 'The scenery of England and Wales,' can hardly be held to offend native sentiment when the inhabitants of the locality put the name on their notepaper!

A dilemma arises in the case of features which enjoy no local name and for which the geographers have suggested nothing apt or acceptable. There is wide agreement that East Anglian Heights is an unsuitable name (it suggests,

as someone has said, "a row of beetling crags"), even though it has crept into an Ordnance Map, but I have as yet seen little willingness to accept Sir Halford Mackinder's new alternative of Icknield Downs. Sir Halford urges that the case for his proposed name is not merely "that the area in question does not in the main fall within East Anglia, but that it seems incongruous to speak of Heights when the next block in the same belt of features, namely the Chiltern Hills, is twice as high whether measured to summits or average level. Also do not forget the number of inhabited places, as the Russians would say, commencing with the syllable Ick (probably referring back to the Iceni) which will be found in the district round, 'Downs,' because I believe a century ago there was here Hill pasture for sheep, though arable farming now, but both contrasted with the beechwoods of the Chiltern Hundreds."

On the other hand, it seems to me quite wrong for us to accept a geographers' label for a feature which continues from ancient times to enjoy a suitable local name. A case in point is the long west-facing limestone escarpment of Lincolnshire which is locally still known by its pre-enclosure name of The Heath, while its western edge is aptly called The Cliff. Lincoln Edge, the name which is found on the O.S. 1 : 1,000,000 map, is expressive only for the cliff, does not serve for The Heath, and seems overdue for abandonment in favour of the respectable native name.

One of the most important questions to be decided is whether names of hills or mountains should not sometimes be written without the use of the formal Hills, Mountains, Range, or similar word. I think it is not possible to lay down a very definite all-embracing rule on this point, but there is something to be said in favour of using some names in the shortened form. It would solve the problem of the impropriety of Pennine Chain if we were to follow the very common and not by any means modern usage, and speak and write of Pennines. If, as I believe, the name is an ancient adaptation of Apennines,[1] which the G.S.G.S. maps and even the B.B.C. speak of as just Apennines, the suggestion seems reasonable. Pennine Uplands, which may be good geography, but is unlikely to find popular favour, has been suggested, but I would definitely prefer and would strongly recommend Pennines or The Pennines. Most of those who have corresponded with me on the subject agree on this. The Cotswolds is not comparable, for, common as it may be, Cotswold Hills is tautological. The O.S. uses both forms.

The Chiltern Hills is a comparable case with Pennines, except that there is nothing wrong with their being described as Hills. The O.S. uses the form Chiltern Hills on its map, but tacitly admits the modern tendency to abbreviate by adopting Chilterns as the title of its Special District map. In the same way, while using Cumbrian Mountains on its ordinary maps, though omitting it on its physical one, it wisely uses the popular name Lake District for the Tourist Map.

There are many other problems on which I might touch, but my function is to open, and not to anticipate, a discussion. One is the vexed question of

[1] Wm. Camden, 1637, wrote of "that high hill which I termed the Apenine of England . . ." It is interesting to note how closely he was copied; for example, Thos. Dugdale, in 'England and Wales delineated,' 1835, wrote of Durham, "The country is crossed by the chain of hills termed the English Appenines."

the extent to which the Welsh and Gaelic spellings might be used for names. I will but say that in the case of Wales Mr. Bowen has suggested that the English spelling should be used in the areas wherein less than 80 per cent. of the 1931 population was able to speak Welsh, and that within the areas where the native language is used names of national rather than local significance, *e.g.* Snowdon, should be spelt in English. To this I would add that, whatever decision is reached, we ought not to continue to compromise with the use of spellings which are half in one language and half in another, such as Mynydd Presceli.

Lastly, I would urge the need for thinking clearly of our object. This I take to be the finding of the right names for the physical features shown on our map. We should not be unwittingly led astray by some who will endeavour to use this opportunity to introduce their favourite names, whether or not they are suitable for the map, and by others who will wish to leave no unnamed spaces on the map, even if they have to invent unsuitable names to fill them.

The DIRECTOR-GENERAL OF THE ORDNANCE SURVEY (Major-General CHEETHAM): The Ordnance Survey owes a great debt of gratitude to Dr. Willatts for taking on this work. It is not an easy task to get agreement as to names, and he is taking a good deal of work off the Ordnance Survey in this respect.

The question is, who is to be responsible for the names on this physical map; that is to say, who is going to be prepared to take all the criticism which may come after the map has been published, when those who advocate particular names may come forward and say what they want. The Ordnance Survey have published several maps for the Ministry of Town and Country Planning in this series, and in each case we have explained who is responsible for the information on the overprint. It has not yet been definitely decided who is to take the responsibility for the names on this particular map. If however it is to be the Ordnance Survey, it is clear we shall have to follow our normal practice: that is, that we are responsible only for recording common usage. We cannot be used either to resuscitate old names which have died and which possibly some think better than the current names, or to introduce to the public favoured names which are not yet in current usage. We are definitely responsible for recording what might be termed current history.

Dr. Willatts said that the Ordnance Survey was willing to receive suggestions. We certainly are. If we take the responsibility we shall be very glad indeed to get information from all concerned. So far we have found difficulty in getting the information we require for this type of place-name. In the case of the names of objects such as villages, farms, houses, and so on there is a well-established practice, in the course of which we send out forms to landowners and prominent persons, town clerks and others, and ask them to authorize a particular spelling. Sometimes when we send out five forms we receive back five different names for the same place. It is then the unfortunate Director-General who has to step in and act as referee. But in general we get a fair measure of agreement. That system however only applies to the names of objects which appear on one quarter-sheet of the 6-inch map. For names which cover a wider area we have no definite authority of that kind. Perhaps when Dr. Willatts has pursued his investigations a little farther we might be able to get out some system comparable with that which I have described.

Dr. Willatts has asked for general criticism of the map. My proposal would

be that when we have some idea of the general names that are going on the map we should put them in a list for any particular district and ask several authorities for that district and also geographers to give their idea of what the name of the feature should be. In that connection it appears that there are three points to be decided. The first is whether a feature is to be named at all. That will have to be decided before we send the list out. Secondly, if the feature is going to be named, what are we going to call it? That is where I hope the list will be found useful. Thirdly, what extent of country does the name cover. I am referring, of course, in that case to an example such as the North Downs which on the 1:1,000,000 physical map are shown extending from Newbury in the west whereas it is now proposed to show them only from somewhere in the neighbourhood of Guildford.

Turning to certain special points which Dr. Willatts raised, I am heartily in agreement that the map should not be overloaded. I am sure if we try to put too many names in that the whole map will become confused and we shall not be able to see anything. I fear I do not altogether agree on the subject of gaps and passes. It seems to me that the most important feature about a large mountain mass is not where the summits are but where it is possible to get through the mountains. The question is whether this is a type of map on which such information should be shown. I think Dr. Willatts' point is that it is not. For instance, to take an example arising out of the war, the Brenner Pass is, we will say, of more importance to mankind than the Matterhorn. Therefore it has more claim to be on the map although the Matterhorn is probably better known than the Brenner Pass. At the moment the map under discussion has no spot heights of the summits on it. It seems to me that Dr. Willatts' suggestion that they should be put on is correct.

As to the question of the naming of valleys where there is already a river, one can agree at once that a name such as Thames valley might well disappear. On the other hand, there is a name such as Wensleydale which does not derive from a river; but the dale is a very well-known feature and should appear on the map. I have two links between those and I shall be glad of an opinion as to which of these should be shown and which should not. The Thames valley we will definitely say should not be shown. Next I have Teesdale. Tees is the name of the river, but should Teesdale be shown? Next consider Wharfedale, which is well known as a locality, but it is the valley of the river Wharfe. Wensleydale we agree should be shown. I should like opinions as to Teesdale, which I believe is not so well known a district name as Wharfedale, and whether the name Wharfedale, which still contains the valley of the river, should be shown or not.

With regard to change of names on the map, we have come to an agreement with the Admiralty under which they accept all the Ordnance Survey names, and there are certain publications issued by the Admiralty, including lists of lights, in which, if the Admiralty names do not agree with those of the Ordnance Survey they are changed. Those may not appear very much on this physical map, but probably there will be some capes and points which will appear as names on the Admiralty list of lights. If we have got them wrong, and common usage decides that they are wrong, it is rather a nasty problem, because we shall be faced with asking the Admiralty to change all the lists of lights and other publications. I think other problems arising from what might be called vested interests will come in as well as common usage.

The PRESIDENT: General Cheetham's predecessor is also present. I do not know whether he is disposed to speak.

Major-General M. N. MACLEOD: I do not think I can add much that is new

to this discussion, though I would like to underline one or two points made by Dr. Willatts and the Director-General. First, as to the question of the authority for a name. General Cheetham has explained that the Director-General, though he sometimes has to act as a referee between what I might call competing authorities, is not in himself an authority for a name. The Ordnance Survey try to discover what is the name of any feature and if possible who is responsible either for giving the feature that name or for its spelling. That raises a point in connection with this physical map, in regard to names of mountain ranges and other features which do not belong to anybody and for which there is no administrative authority of any kind. The Ordnance Survey practice with regard to local features, as many of you are probably aware, is to ascertain, when they are surveyed on the ground, who is the authority for the name. The version of the owner of a property or a house is regarded as the correct one. Similarly with administrative authorities. In the case of this physical map it has to be decided, somehow or other, whether the name habitually used by the local people is to be adopted or whether the name habitually used by geographers, or the Government, or somebody at a distance, is to take precedence when there is not agreement. That is going to be a difficult decision to arrive at in many cases, but it is desirable, when possible, to lay down a principle before starting to argue about the matter.

In any small-scale map the decision as to what names to include and what names to omit is always a difficult one, and in the case of a physical map that choice is complicated by the fact that the map is a physical map, and its primary purpose, as I see it, is to show the physical structure of the area covered. There is no doubt that whether the map is published in the form of a layered map, or, still more so, if there is an attempt to show hill shading, the addition of names undoubtedly obscures the map and renders it difficult to read. I hope that Dr. Willatts and the Director-General will be very firm in showing no more than the absolute minimum.

The question of passes is likely to give rise to difficulty. Passes, I agree, are of great importance in the matter of communications, military strategy, and so on, but when they are considered from the point of view of the geological or physical structure of the country, I am not so sure. At any rate, I am certain that if too many names are included on the map, physical features will be obscured.

The PRESIDENT: I think Squadron-Leader Linton is with us, and I call upon him.

Squadron-Leader D. L. LINTON: I would chiefly like to echo Dr. Willatts' plea for economy in the use of names on the map. Taking the viewpoint that the map is to record, for general rather than for academic purposes, the names currently in use for the physical features of Great Britain, we may bear in mind that the traditional names which have come down to us fall broadly into two classes. In the highland areas it has been, in the main, the lowland features which were named by our forefathers, the dales and straths in which they lived. The mountain masses themselves, as distinguished from the peaks which compose them, have only been named by this and the preceding generation, largely as a matter of academic convenience. Such names as Snowdonia, Cairngorms, Cuillins, and Southern Uplands are cases in point and though all four are now in current use, the last can hardly be claimed as popular. On the other hand, in the lowland areas it is generally the hill features that have received names, commonly as landmarks or boundaries, while the vales and plains have been largely taken for granted and named only when some sharp difference of soil or drainage conditions has called forth such names as Chat Moss or The Fens.

This economy in the traditional nomenclature should be respected. Some extensions are of course demanded to meet present-day requirements and the authority of the new map should be used to establish some new names and to fix the connotations of others like Grampians or Cheviots. But there should be no attempt to invent new names merely to fill what would otherwise be blank spaces on the map. It is not desirable for example to cover eastern England with such names as those which appear on the suggested map: Norfolk Edge, Cromer Ridge, or Icknield Downs. Such conceits correspond neither to local usage nor to the systematic nomenclature which is being established by physical geographers and are no substitute for either.

Secondly, as this is a map of physical features, it is essential that the names should be those of the physical units, possessing a clearly defined individuality. Names of peninsulas like Gower, Kintyre, Ardnamurchan, and so on, refer to something almost as sharply defined as the Isle of Skye or the Isle of Wight, and there can be no question whether it is legitimate to use them. Similarly we must use the names of well-defined hill masses, like the Malvern Hills or the Cotswolds. In the lowland areas it is possible that we should recognize pronounced differences of soil which have been traditionally distinguished in such names as The Fens, the Suffolk Sandlings, or the somewhat recently invented Breckland. The terms Lincolnshire Marsh and probably the Somerset and Sussex Levels also come under this category, but I am somewhat doubtful about the name South Hams which appears on the map of suggested names in South Devonshire. I do not know how strong the local feeling is about this name, but it does not correspond to any physical entity that I myself know.

The Director-General of the Ordnance Survey touched on the point that the names must be correctly placed upon the map. There have already crept on to the map of suggestions a certain number of errors which it will be tiresome to detail, but I might refer to Ragstone Ridge in West Kent and East Surrey. Ragstone is a particular type of earthy limestone which is developed in mid- and east Kent. The feature in question is doubtfully worthy of the name Ridge at any point, and it ceases to possess any ragstone some miles to the east of the point where the name terminates on the map. The name is, in fact, applied wholly to the area in which this ridge is made of cherty sandstone. As for the Icknield Downs, the feature to which I presume the name should be applied is not downland but a low plateau of boulder-clay which, traditionally, was covered with forest and to-day is covered with farms.

I would like to support what Dr. Willatts said in regard to tautologies. I even feel that the Isle of Sheppey is a case which might be reviewed, and I doubt whether the names Cleveland and Cleveland Hills need to appear side by side. Cleveland refers, I presume, to the land immediately below "the cliff"; Cleveland Hills to the land above it, but one or other should suffice. And in spite of the eloquent plea which Dr. Willatts made I doubt whether two names are necessary to describe the hill feature that runs through Lincolnshire from north to south.

As to passes and summits, a possible criterion for consideration is that no name on the map should sprawl across a piece of country which is disproportionately large in comparison to the feature to which it refers. On a small-scale map that may easily be the case. A pass on a map of the scale of roughly 10 miles to the inch, will probably run over 15 miles of country. The pass itself is half a mile long. There is a disproportion here which give us pause, and that argument may be applied with equal force to summits and to a number of minor features generally.

The PRESIDENT: The Secretary has received several written contributions to

the discussion. I will ask him to summarize them. He has also some remarks of his own to make on the use of the word Vale, and on the omission of essential waterways in the Fens.

Dr. H. R. MILL wrote from Dormans Park: I have had the opportunity of a talk with Dr. Willatts on his proposals for the physical map of England, in which I discussed its relation to the points sponsored by Sir Halford Mackinder, Dr. G. G. Chisholm, and myself in 1904, and I need not refer to that part of the subject now. With regard to the map of Scotland, showing the three great divisions of the Southern Uplands, the Central Lowlands and the Highlands, I suggest in addition a fourth division, which, although small in area, is of equal geographical significance. This is the Caithness Plain, lying beyond the Highlands and extending its characteristic features into Orkney.

The Highlands and Southern Uplands require sub-division, following definite physical features. The Highlands are cleft into two parts by the Great Glen, which is emphatically *the* Great Glen, as nothing comparable with it in magnitude exists in any other part of the country. One might give it the Gaelic name of Glen More, but Glen More Albyn sounds pedantic. The North-West Highlands may be taken as a whole.

I am of opinion that the portion of the Highlands south of the Great Glen should be divided into the Eastern Highlands, to which the name Grampian, if it is retained, should be limited; and the South-Western Highlands. The dividing line is a natural feature, as real if not as sharply marked as the Great Glen. It is the long furrow through which the Highland Railway runs from Perth to the Moray Firth. The north portion of this furrow is correctly named on the map as Strathspey; the south portion carries the river Garry, which should certainly be marked on the map, from the Drumochter Pass through the Pass of Killiecrankie, where its name is changed to Tummell at its confluence with the Tummell river flowing from Loch Rannoch. And lower down its name is changed again to Tay, where the Tay river comes in from Loch Tay on the west. But call it Garry, Tummell, or Tay, the south-flowing stream is one river, and not three. I suggest for this feature and Strathspey the name of the Central Furrow, or it might be called the Tay-Spey Furrow for short.

It is open to question whether the form Rannoch Muir is more appropriate than Moor of Rannoch for the great feature which dominates the main watershed. In the south-western as in the north-eastern Highlands, the old clan names usually coincide with or include separate physical regions, and most of these are appropriately shown on the map. All mountains of over 3000 feet should be named, and I think that most of them are. I consider it very important that the names of all lochs more than 5 miles long should be shown, and also all large sea-water inlets, whether firths or sea-lochs, as these are of much value in identifying districts. The Lowlands seem to me to be very fairly dealt with.

The Southern Uplands are divided into an eastern and a western portion by the north and south furrow of Annandale and Clydesdale, the hills on each side of which form watersheds separating the north and south flowing rivers of the furrows from the east-flowing system of the Tweed, at the head of which Tweedsmuir should be shown as a dominant feature. The western ridge of the furrow separates it from the westward drainage of Galloway, Ayrshire, and Renfrewshire.

There was a time when I strove after consistency in terminology and nomenclature, to attain which I should not have shrunk from speaking of the Firth of Thames or of the Vale of Spey; but I found that it would not work in geography, and all we can hope to do in the asymptotic approach to definiteness is to avoid using the same word in the same place in more senses than one. There

is ambiguity in the use of the word Water in the sense of River as a local variant, which I think might be dropped in favour of the more general term. I am surprised to find on the map of a country which I know intimately several names that convey no meaning to me, such as Evalix, Liathach, Ladder Hills, and Glas Maol; and I think that their usefulness should be confirmed by some authority.

Dr. Willatts has my hearty good wishes for his success in carrying out this most interesting piece of cartography.

Dr. ARTHUR GEDDES, writing from Edinburgh, submitted a memorandum of which the following is a summary:

In Scotland an informal committee, consisting of Professor A. G. Ogilvie, Mr. John Bartholomew, Mr. W. R. Kermack, and myself, met with the object of clarifying principles for the choice of names in Scotland. We also considered the question of introducing names for Britain which were of interest to the peoples of both countries. This group or committee is conscious of the opportunity offered by the proposed physical map and also of the need for fuller enquiries which are being undertaken by the help of those with local knowledge and the national and the weekly local press. The main decisions of the committee follow:

Dr. Willatts' remarks that "it seems pointless to detract from the clarity of the map by adding names which may be mere geographers' labels. Thus The Eastern Plain of England is hardly to be considered, but The Fens must go in." We think there is something to be said for giving geographer's names to areas or regions, whether of highland, upland, or lowland, which now, or in the future, must be thought of as regional units. There is much to be said for the name Eastern, or better Southeastern Lowland of England or Britain (in which is included the Eastern Plain). The complementary names covering the rest of Britain, from South Wales to Clydeside and the Scottish Highlands, might be Western and Northern Britain. Further major names would be the Highlands, Mid-Lowland, and Southern Uplands in Scotland. The practical difficulty that large names detract from the clarity of the map, besides being difficult to read, might be met by printing a small map as an inset. This would stress the broad geographical conceptions and would free the coloured physical map from names such as the Southern Uplands and Pennine Uplands. We are anxious to avoid considerations of mere administrative divisions, hence the plea for a bold systematic division of Britain apart from the definite regional names mostly well-accepted.

In Scotland four major regional names would stand out. Northwestern Highlands was accepted by the committee. The remaining part of the Highlands is difficult to name: Ogilvie and Kermack suggest Southeastern Highlands, Bartholomew, the Central Highlands, while I prefer the Grampian Highlands, suggested by Dr. Willatts, as a legitimate extension of the widely accepted, if loosely used, Grampian mountains. The Southern Uplands was accepted. The old practice of confining the term Highlands to the Highlands north of the Clyde and Tay precludes the use of Highlands farther south. For the intervening lowland the terms Midland Valley, Mid-Scotland, and Central Lowlands, have been variously used, but all seemed to offer some objections. The area is not one but several valleys, Midland is associated with the Birmingham area, Mid-Scotland with the Mid-Scotland Canal between the Clyde and the Upper Forth, and Central refers properly to a point rather than to a zone or area, while Lowlands includes other great regions from Buchan to the Borders. The name Mid-Lowland was recommended by the committee as descriptive, clear, and in line with traditional usage.

Most of the regional names, roughly of "county area," frequently corresponding to old earldoms, and forming well-defined physical units, were accepted. The Borders should be added for the part of the Southern Uplands from Nithsdale to the mouth of the Tweed. The final *s* of Lothians should be deleted; the Three Lothians refers to counties. Lothian implies the land from the edge of the Firth round Dunbar southwards to the watershed, and excludes the fragment of Midlothian stretching down the Gala Water (the old Wedale). Clydesdale might legitimately cover the Clyde valley from Glasgow upstream and into the hills. Alternatively the Clyde valley, upstream from Lanark, might be described as Clydesdale as suggested by Dr. Willatts, and the lower valley from Lanark to Glasgow (or even Greenock) as Strath Clyde. For the basin formed by Cunningham, Kyle, and Carrick, Ayrshire seems legitimate. Although Fife is written after "Howe of" on the draft map, its distinctness as a "kingdom" (to quote a playful boast) justifies using Fife to cover the area bordering the shire of Kinross. Strathmore was accepted, but should be extended to include the Howe of the Mearns, the Howe of Angus, Stormont, and Northern or Upper Gowrie. The name of the old region of Mar (approximately the ancient earldom) might be added for the valleys of the Dee and Don between Strathmore and Buchan, with the sub-regional names of Braes o' Mar, Cromar, Midmar, and probably Laich of Mar. Glenmore was accepted but "of Albyn" should be deleted.

Most of the names of sub-regions were accepted. Muir of Rannoch, a lowland pronunciation, is better altered to Moor. Tweedside, while not fully discussed, did not quite satisfy. It should march with the old name of Tweeddale, for the Tweed above Minch Moor and the Yarrow confluence, roughly Peebleshire. I was inclined to favour its adoption as linking both sides of the Tweed, below, say, the Leader (Lauderdale) confluence, and including the southern banks of the Tweed with the lower Till basin and the extreme northern coast of Northumberland. It should be weighed along with the well-established though ill-defined Merse, with its dual origin of Mersc, a mairsh, or marsh; and *Mairch*, March or border.

Suggested additions include a name for the hilly mass of which the fragments are known as Kilpatrick Hills, Campsie Fells, Kilsyth Hills, and Gargunnock Hills. This massif is referred to in three gazetteers—Bartholomew's, Groome's Ordnance, and Johnstone's—as the Lennox Hills. These hills border the basin or human region of Lennox (Gaelic Leamhnach), which should be added, it includes Loch Lomondside, its tributary valley Strathblane, and the Vale of Leven, sometimes extended as far as Loch Long on the west, and Lennox Castle and Lennoxtown (on the Blane-Kelvin watershed) on the east. Gowrie might be included, not merely on historical grounds, but also apparently from current rural usage. Gowrie is understood to stretch from the Carse of Gowrie, possibly with the Earn Flats or "carse" below Bridge of Earn, northwards to Blairgowrie (formerly Blair in Gowrie), possibly including Stormont. Mannan was proposed for a lowland arbitrarily divided between four counties "the estuarine basin of the Upper Forth." This clumsy expression is necessary owing to the loss of the former name Mannan, although retained in two sub-regional names: Clackmannan, a shire, and Slamannan, a moorland parish west of Falkirk and above the Carse of Forth. The name Mannan was generally approved by the committee, although it is in the genitive case, the nominative case being lost and uncertain. Vale of Kelvin, or possibly Strath Kelvin, is recommended for the vale linking Clydeside to the Carse of Forth. The Carse of Forth is preferred to Carse of Stirling, which would limit the raised beach area to one shire, excluding the remaining three over which this unit extends.

So far as Scotland is concerned, regional names are of greater significance than is generally realized outside each particular region. The majority of the names of lesser sub-regions or districts might be unfamiliar to the majority of Scotsmen, still more to Englishmen, yet each may be known and in common use among the inhabitants. The stranger should not assume they are out of use merely because they are not used in speaking to him. Each small region can be seen from a hilltop; its name evokes a clear image, of a landscape and its people. Hence the printing of regional names in rather greater completeness than on the Ten Mile Map, which already constitutes an excellent precedent, would appeal to commonsense, arouse fresh regional interest in a region's character, and its future and its planning. Where man-made features cover a lowland area on a Ten Mile Map, along with a multiplicity of settlement names, there is little space for these regional names. The Physical Map offers a special opportunity at a special time in a series of fresh surveys for planning needs. Names which are in common oral use at home, because they fulfil a need there, are now realized to fulfil wider inter-regional needs. In the University of Aberdeen the names of the four "nations" of Mar, Buchan, Moray, and Angus, are still in use, for instance. The map offers the opportunity to make these, and their like, a part of international usage in Britain as a whole.

Mr. E. G. BOWEN wrote from Aberystwyth: I have examined the draft map prepared by the Ministry of Town and Country Planning and am of opinion that the selection of names for the major physical features is generally satisfactory for those parts of the country well known to me. I have made a special study of Wales where the problem of the spelling of place-names arises in addition to their applicability in given instances and to the extent of territory covered by them. Some general rule should be followed by the cartographer in the spelling of place-names in Wales, and it would be as well if the Ministry of Town and Country Planning followed a suggestion by Professor Sir John Lloyd, F.B.A., in dealing with a similar matter. In a work on Wales written in English, place-names appeared in their English form where one was in common use, in all other cases the Welsh form was used, spelled in accordance with the canons now adopted by all Welsh scholars. This, of course, is a compromise, but a very satisfactory one; the chief difficulty arises in deciding where an English form is in common use. This should depend primarily, but not entirely, on the percentage of the population in a given area able to speak Welsh. Where this percentage is over eighty it may reasonably be stated that no English form of a local place-name is in common use, and since it is possible to demarcate on a map the limits of the area where over 80 per cent. of the population could speak Welsh in 1931, it is suggested that within this area all place-names should be spelled in accordance with the canons now adopted by Welsh scholars, while outside this area English, or even composite and degraded, forms could be written where they have been in use for a long period. Names which have retained their Welsh form should however be correctly spelled even in this area. There are, of course, exceptions to such a scheme as, for example, in the use of the name Snowdon for the peak well known beyond the limits of the area where over 80 per cent. of the population are able to speak Welsh, but, in the main, such an objective method of determining the spelling of place-names in Wales appears to me to be generally justified in the circumstances. Applying the suggestion to the draft map now under discussion the following names, for example, occur in the area where over 80 per cent. of the inhabitants are able to speak Welsh: Plynlymmon Fawr, Mynydd Presceli, Carnedd Llewelyn, but these names should be spelled Pumlumon Fawr, Mynydd Presely, and Carnedd Llywelyn, respectively.

Mr. D. TREVOR WILLIAMS wrote from Swansea: Map-makers, in the past, have anglicized, or distorted, the spelling of physical features in Wales in such a way that their pronunciation has no resemblance whatsoever to the actual names of the features, and the origins of the Welsh place-names are completely falsified. In many cases the present forms are so well recognized that it would be impossible and perhaps inadvisable to change them now. However, in many instances, the true spelling, related to correct derivations, does not involve considerable alteration from the names which have become customary for some time. Such names are Mynydd Presely, Vale of Powys, and Carnedd Llywelyn for Mynydd Presceli, Vale of Powis, and Carnedd Llewelyn, respectively. Possibly, the river Loughor on the map should read Llwchwr, which is the Welsh form and is the name given to the Urban District on the left bank of the river.

The two features, Black Mountain and Black Mountains, are always confused. The former is in a district wherein over 90 per cent. of the population speak Welsh. It is invariably called Mynydd Du, and this would avoid all confusion with the Black Mountains, to the east of the Brecon Beacons.

As additions to the map, I suggest the inclusion of Central Wales Plateau for the area south of Plynlymmon and of the two descriptive terms Blaenau Morgannwg and Blaenau Gwent for the South Wales Coalfield uplands, south of the Brecon Beacons. Blaenau (uplands) is the counterpart of Bro (vale), and the names are historic, as well as descriptive, in their application to the two districts of the South Wales Coalfield uplands and Vale of Glamorgan. The extension of Mynydd Presely north-eastward, between the Teifi and Towy rivers, to link up with the Central Wales Plateau is called after the several districts, *e.g.* Mynydd Llanybyther and Mynydd Tregaron, but I do not know a general name for these North Carmarthenshire Moors. The word Plynlymmon means Five Peaks, given by the spelling Pumlumon, but it would be rather pedantic to go back to the old, yet correct, nomenclature.

Cartographic comments have already been sent to Dr. Willatts, but I wish to draw attention to three additional points for consideration in the South Wales area; first, the upper part of the Llwchwr (Loughor) on the map is not the Llwchwr headwaters but those of the Amman; secondly, the Taff river should be marked as well as the Rhondda, its tributary; and, thirdly, the flats, east of the Vale of Glamorgan, should be named collectively the Gwent Levels to bring out their physical similarity to the Somerset Levels, south of the Severn Sea.

Mrs. R. T. SOUTHALL wrote from Mathon: Between the Plynlimmon Fawr and the Mynydd Epynt are high and extensive moorlands forming a well-marked physical region but nameless on maps and, apparently, to the modern local population. The ancient name of these hills appears to have been Ellineth, and I wish to suggest that, unless Welsh geographers have any other name in actual use, the new map under discussion should revive the ancient name for an area at present inconveniently nameless.

Mr. GORDON MANLEY wrote from Cambridge: The name Pennine, although in the main attributable to Camden's ideas and therefore not of high antiquity, is so useful that in one form or another it must be retained. Among its subordinate parts however the Howgill Fells are well recognized and might be added to the list. Farther south, Bowland Fells certainly, but surely Rossendale Moors. The southernmost occurrence of the word Fell lies just north of the Ribble. For the flanks of the Rossendale moors the old names Gunnolf's Moors and Fairlock (Leland) appear to have died out, but Blackstone Edge

might be worthy of retention. Farther north the old name Athelstanemore (*cf.* Mercator, 1564) for the region often called in another place the Alston Block has also died out, although it too might have been useful; the alternative Elizabethan Fiends Fell has a certain appropriateness, but one can scarcely press for a revival. Stainmore however is welcome as a regional name of very high antiquity and persistent use. Among individual summits in this region one might plead for Mickle Fell; and in the Lake District, Great Gable and Black Combe. Edenside is the local name for the proposed Vale of Eden, becoming Mallerstang above Kirkby Stephen. All the other major valleys north of the Aire and Ribble are dales as far as the Tyne, and the varying nomenclature is probably associated not only with the origins of the dominant settlers, but also with certain characteristic features of the landscape.

How old is the term North York Moors, and is it too late to replace this rather ambiguous term by the old and useful Blakemore or Blackmore, a regional name corresponding with Stainmore to the westward, found on the Bodleian map and for long after?

Many will prefer The Cheviots and The Cuillins, neither of which are hills in the normal English usage. Ivinghoe Beacon and Roseberry Topping might appear, and perhaps Warden Law in Durham; this last would call attention to a significant physical feature otherwise nameless. Several writers have preferred The Peak, of long standing as a regional name and in local usage, for Peak District.

Mr. W. V. Lewis wrote from Cambridge: A clarification of the names of physical features in Britain is overdue. The opportunity afforded by the preparation of maps for the Ministry of Town and Country Planning has been well taken by Dr. Willatts. In fact, one would like to see many more such regional names on the map. Icknield Downs is a happy alternative to East Anglian Heights, and Breckland, Norfolk Edge, and Cromer Ridge are also appropriate, but Vale of Baldock has less to commend it.

In Wales the dual language problem has been faced satisfactorily on the whole, but there are some shortcomings. Plynlymmon should be spelled Plynlumon or Plynlimon. Plynlimon Fawr is a summit distinct from Plynlimon Fach; if the range is to be named it should be left Plynlimon. Mynydd Presceli should read Mynydd Preseli, for the *c* is hard in Welsh, and this name is never pronounced with a hard *c*. Fforest Fawr is still in use and might be considered in place of Black Mountain to avoid confusion. Also Y Fan applies to an area including the Brecon Beacons and the limestone country to the south, and if a name for this whole area is sought Y Fan might be considered.

Captain W. N. McClean wrote that Central Lowlands might be added between the Highlands and Southern Uplands; asked for names of Sea Lochs, such as Loch Hourne and Loch Nevis; and suggested addition of peak names: Ben Attow; Sgurr Mor, 3600 feet, above Loch Fannich; and Beinn Tee as a notable feature of the Great Glen.

Mr. Hinks: I note that no names of man-made features are in Dr. Willatts' view suitable for a physical map. I submit to him that there is certainly one exception, the case in which the actual physical drainage of a large district depends entirely upon man-made channels. Dr. Willatts excludes altogether the Bedford Rivers from his map. It seems to me that they are essential features because they have superseded the natural drainage, or rather the want of it. To leave them out makes the physical picture altogether wrong. Dr. Willatts apparently did not observe that he has actually included certain man-made features, in a straight stretch of the river Ouse below Ely, what is called

the Adelaide Cut, and a straight stretch of the Lark before it enters the cut. The really essential features, the two Bedford rivers, are left out, whereas the Old West River is still there, looking like a very important stream although it is an entirely derelict passage.

I would like to mention also the use of the word Vale. The Concise Oxford Dictionary, to which the President has referred as an authority, tells us that vale is mostly poetic, but it is perhaps a useful word as an alternative to Valley. I would submit that a vale has at any rate two higher sides and it has a head. I submit that a vale cannot go over a col into another valley on the other side. Therefore I was shocked to see that the Vale of Baldock appeared in the upper valley of the Cam, running all the way down from Ashwell to Hauxton or Grantchester. That is a broad open plain sloping down towards the valley of the Cam, which runs rather on the northern side of that vale. If it is called the vale of anything, it might be called the Vale of Ashwell or Royston or Bassingbourn or Melbourn or Barrington, or any of several others, but you cannot call it the Vale of Baldock. Baldock is close to the source of the Ivel which runs into the Ouse; it is over the watershed from Ashwell. That seems to me an example of a geographical name which has been invented by somebody who could not even read a map.

There is another vale, the Vale of St. Albans (which I suspect to be a bogus name), which runs from Watford to Hertford on Dr. Willatts' map, and then goes off down the valley of the Lea and all the way to Hertford. I hope they will be included among the names into which Dr. Mill hopes there will be considerable local enquiry.

If one takes the view that a vale has two sides I would submit that the Vale of Glamorgan, which is a coastal plain and has only one side, is unworthy of the name Vale. Fortunately it may come under the rule which would put its name into Welsh, so that the difficulty would not be so apparent. Icknield Downs does not strike me as being a good name. I have already remarked to Dr. Willatts that everybody in East Anglia calls the fens The Fens and not Fenland, as on the map, and I think he has that name in his list.

The PRESIDENT: Mr. O. G. S. Crawford was recently Archaeological Officer of the Ordnance Survey; if he would be so good as to contribute to the discussion we should be glad to hear him.

Mr. O. G. S. CRAWFORD: I feel we are living in a somewhat unreal world, a very pleasant one, of vales, forests, fens, and such like, but somewhat unreal. In the world in which I live we do not refer to the Vale of Glamorgan or the Isle of Purbeck. We say we have been to a place between Bournemouth and Weymouth. A great number of these names have, unfortunately, gone out of current usage altogether. Some, those which are, for instance, forests and tourist districts, such as the New Forest and the Lake District, have retained their names for the good and excellent reason that they are still used and frequented as districts by those going on holiday. New names have been invented for some: Snowdonia, for instance.

So we come to the basis of the whole matter: what is to be the decisive factor in selecting these names? As the Director-General of the Ordnance Survey said, the Ordnance Survey custom is that local usage shall be the decisive factor. Of course no one can possibly gainsay that. That is the obvious basis for all names on maps of this kind, and many others. But the difficulty will be to get local usage for these names. Many of them have gone out of currency altogether, and some of those which have been on the maps for longer even than the Ordnance Survey has existed have never really had any local usage

or a local basis, at any rate no historical basis. For instance, the word Grampians originated in the misreading of a phrase in Tacitus who, incidentally, wrote the history of a campaign in which he mentioned only eleven geographical names. He referred to Mons Graupius. This was written as Granpius and the *n* was changed to *m* by a familiar process. So we got the word Grampians out of it, which had a certain currency amongst those interested in history in the eighteenth century, and has become fixed firmly on the map. If you want local usage for it, you may get it now, but originally you would not have got it except amongst a few scholars. I do not think there were any geographers in the eighteenth century, which might have simplified the problem. That seems to me the basis on which we have to go. Local usage I entirely agree is one decisive factor, but I think it will be a very difficult one to apply here.

The existing names on Dr. Willatts' map are exceedingly well chosen, and I would like to congratulate those responsible for their selection. The names often have an historical background, and include many old forest names: Purbeck, New Forest, Blackmore Vale (which incidentally is not a vale and is modern; Blackmore is a forest area). When they came into currency they had a perfectly firm basis in local usage; they were the ordinary terms used in the administration of the district, and everyone knew them because they knew that if they did certain things in a particular area they were liable to certain penalties.

To come to detailed criticisms, all mine are matters of personal taste. I submit them as such, except where they can be supported on historical grounds. I prefer the forms (without "hills"), such as the Quantocks, the Chilterns, the Cairngorms, and the Cuillins, partly because I have used them all my life; but I think that preference can be rationalized by saying that some are not really hills at all. From the top of the Mendips one sees a broad flat plain, not hills at all: a plateau, but not hills. I should prefer to see them called the Mendip.

Then I would suggest that the highest spot in the south of England should be included in the map, and I should like to put in a plea for the existing local word Walbury which happens to be a hill 975 feet high. It is called Inkpen Beacon on the Ordnance maps, which is a name invented at the time of the first triangulation of the Ordnance Survey to describe a beacon which was used as one of the main trig. points. If Inkpen Beacon must go on, let it; but it is purely an invented word, actually invented by the Ordnance Survey. The word I would like to see is Walbury, the name of the hill itself, and a very good name. I should like to see that particular name. It is the highest point south-east of the Mendips.

The spelling of Gaelic names is a difficult problem. There is the spelling Ben More and Mawr, and another form Beinn Mhor, exactly the same thing spelled in rather a pedantic way. Personally, I prefer the Anglicized form. For Glen Strathfarrar one would prefer Glen Farrar or Strath Farrar. Drumalbin is put in at a certain point on the map. Originally it meant Ridge of Britain. It was actually originally the watershed between Moray Firth on the one side and the Atlantic and the North Sea on the other. Here it is localized. I do not know the authority for the localization. I went into the question recently but found it was almost impossible to write that name on the map. It occupied an enormous stretch of country from near Ben Nevis up to Inverness and beyond.

I do not like the form Muir for Moor. I notice in the list Minchmoor and, on the other hand, Rannoch Muir and Lammermuir. Moor is a purely English word, and if names such as Ben More are Anglicized I do not see why we should not Scoticize English names. If you use any such words at all, I should like to see the pedantic Gaelic form Anglicized and the English word maintained as an English word, not put into a sort of pseudo-Scottish dialect.

The use or omission of the word "the" arises in the case of Mounth, the name of the eastern flank of the Grampians. It is called The Mounth, which means the watershed between Aberdeenshire and Inverness. There the term "the" might be added. I believe the Ordnance Survey custom is to put a ban on "the" because obviously it cannot be put in front of every name or thing. I should be inclined to exercise a certain amount of discretion in cases where the word is meaningless without "the" in front of it.

In the Fen region, for The Marsh I should suggest Marshland, which was current up to one hundred years ago and which is, I believe, still current. It is a well-defined region of the Fens; it had an administrative connotation in the past.

The PRESIDENT: The Secretary of the Permanent Committee on Geographical Names, Mr. Aurousseau, may have a point he would like to make. If so we shall listen to him with pleasure.

Mr. AUROUSSEAU (Secretary, P.C.G.N.): I have no particular point I wish to make. My Committee has no jurisdiction over names in Great Britain, but I have listened to the discussion with great interest, particularly as regards principles, which compare very well with correct geographical practice. There has been no indication that names suggested for features that have no name would be taken up by the public. But does that matter? It seems to me that if you have a physical map for use by physical geographers, names which they need should appear on it. Geologists have given a good precedent. They have on their maps names of units to which they are constantly referring, but you never hear those names mentioned by the general public.

I would like to reinforce what Mr. Hinks has said. We have heard a great deal about authorities for names but very little about authorities for language. I think it is one of the Society's functions to guard its language as it guards the rest of the subject of geography. If Mr. Hinks had gone to the Oxford Dictionary itself he would have found a distinction drawn between vale and valley. I do not think we have a better authority than the Oxford Dictionary.

The PRESIDENT: Professor Austin Miller, Professor of Geography in the University of Reading and a new member of our Council, is here, and we shall be glad if he will contribute to the discussion.

Professor AUSTIN MILLER: When I first heard of the proposed map of the physical features of Britain my mind at once jumped to other comparable attempts to describe, explain, and standardize the nomenclature of physiographic regions, such as that in the U.S.A. which was carried out by a committee of the Association of American Geographers, under the chairmanship of Nevin Fennemann, and subsequently enlarged into his two volumes on the Physiographic Regions of the Eastern and Western United States. I feel strongly that the time is fully ripe for something comparable in this country. But while I realize that the aim of the present proposals is something entirely different I believe that there are some advantages inherent in the concept of physiographic regions which might usefully be embodied in the scheme under discussion. Especially I refer to the concept of scales or orders of physical features. A major region such as the North-West Highlands or the Pennines should be given a higher rank (and a more conspicuous lettering) than, for example, Kinderscout or Quinaig, which are merely sub-features within the major uniformity.

Secondly, I believe that we should clarify our minds as to what constitutes a Down, a Ridge, an Edge, or an Isle, and be prepared, wherever a misleading

or inaccurate term is in use, ruthlessly to replace it by the more appropriate one. The chalk uplands are known in different places as Salisbury Plain, Berkshire Downs, Chiltern Hills, East Anglian Heights, and Lincolnshire Wolds; although there are admittedly differences between these regions the variety is not sufficient to merit five separate descriptive terms. Why are the Campsies Fells while the Ochils are Hills? The answer is, of course, that tradition has hallowed that particular form of the name and that it is the local usage. The variety of name however often has the effect of obscuring a physical similarity and tradition should not be allowed to obscure physiographic truth on a map which purports to delineate physical features. The principle of rationalization has been admitted already in the substitution of Lincoln Cliff and Heath for what I still prefer to call Lincoln Edge and of Icknield Downs for the glaring misnomer East Anglian Heights: it could be extended much further by careful scrutiny of each name. A thorough-going application of this principle would, I am afraid, reduce our physical feature names to a sort of "basic geomorphologese" and would logically expunge such dialect forms as Fells and Straths from the map. I do not advocate the abolition of dialectal synonyms, but merely a rationalization of descriptive terms and the elimination of the unsuitable or misleading.

Thirdly, I regard major natural regions, wherever physiography is the main control, as worthy of inclusion in your map, even if they are not in current local use. Dr. Willatts has referred, rather scathingly, to geographers' labels, but these synthetic names have usually had to be coined to describe a physical feature or region, with a genuine existence in reality, which has not received recognition in local usage, generally because it is too large to be envisaged as a unit by parochial minds. A true physical entity should have a name on a physical map, and if local custom has not bestowed one, it is the duty of geographers to invent a suitable label. In my opinion such major regions as the Mid-Wales Highland and even the Central Lowlands of Scotland should be shown. This seems to me justification for the retention of Vales even if, as Mr. Hinks has pointed out, they have only one side. As physical regions their boundaries may be ill-defined but as human regions or as planning units they deserve recognition.

Finally, and this is related to my first point, it does not appear that any constant standard of relative importance has been maintained in the acceptance or rejection of names. I note that Scotland has more names than England and Wales combined, and while recognizing that Scotland is rich in physical features I believe that many of those printed could be erased without serious loss.

I welcome this attempt to clarify and standardize the names of the physical features of Britain, and I hope the authors will be bold in the acceptance or rejection of names and will not perpetuate physiographic misnomers, however strongly entrenched by tradition. I will not detain you by criticisms of details which I will send direct to Dr. Willatts.

Dr. DUDLEY STAMP: First, I feel we ought to keep in mind the purpose of this whole series of maps. These maps are being prepared by the Ministry of Town and Country Planning in its function as the national planning authority. Therefore we should examine the relationship between the national planning authority and the local authorities, and the use which is going to be made, or should be made, of these maps. They are the scientific background of what we hope will be a coordinated plan of national development. I submit therefore that however desirable may be certain names from the geographer's standpoint, the criterion which must be used in selection is that names shall be understood locally; shall form therefore a link between the central government, the central

planning, and the local authorities. If those maps go out to local authorities with the omission of names well known and used locally, they will be severely criticized. In the same way I think they will be severely criticized if they contain names, however desirable for features, which are entirely unknown locally. I think the map which Professor Austin Miller wants is one I want too, but it is not this map. It is an entirely different map, one which we should think about on another occasion: badly needed regional divisions.

Secondly, I am sorry that the representative of the B.B.C. has just departed because that institution is constantly reminding us, day and night, that we are a polylingual nation. I would suggest that there must be an English, Welsh, and Scottish, and Gaelic edition of each of these maps, or we must reach a compromise. It seemed to me that Mr. Hinks, perhaps unconsciously, put his finger on the difficulty when in accepting those delightful, correct, and proper Welsh names he was unable to pronounce them. What is the use of having a series of names on the map which are unintelligible to us who are English-speaking? Is not the solution therefore to have on the map the correct Welsh name and in brackets underneath it the name which we who are English-speaking would use?

I have had exactly the same difficulty recently when staying in the Island of Arran and finding the names on the Ordnance Survey map are criticized locally as being meaningless. They are Anglicized attempts to use the old Gaelic. Surely one has to have the old Gaelic names and the proper spelling with the English interpretation which is commonly used there by English visitors. Goat Fell itself is a case in point. It is a corruption; it has nothing to do with goats. My plea is for recognition of the three languages.

It seems to me the greatest difficulty of all is that of local interest. The names of interest to those who will use this map are often the names attached to quite small local features. As a geographer I dislike overloading a map with names, but I am afraid that on this occasion this is a map which in many areas will have to be somewhat overloaded. Very important features which are known and referred to locally, such as Lickey Hills, which mean so much to Birmingham, will have to go in.

I do not think we can have another regional map. I make a plea for inclusion of certain names which are regional names even if they have got rather close to the concept of man-made features, and of regional names which are not man-made. The Lizard is commonly applied locally to the whole of that peninsula rather than to the point which interests the Admiralty. I know I shall get into trouble from Dr. Willatts, but the Black Country is a physical unit as well as a man-made feature, and it is a name which is so known locally. It can be defined on a physical basis, although the connotation means something else.

In connection with the vexed question of gaps, gateways, and so on, there again the national plan involves national planning of roads and railways. If one wants to refer to the fact that a new road should follow a certain route, that can often be defined locally as a route which will pass through certain gaps which have well-known names. That will have great significance.

I hope in selection there will be constantly in mind the use of the map: that it is a map to be used as the basis of a national plan, a map which has to be "sold to" and interpreted by local authorities, and those who know their local conditions. That must be a fundamental consideration.

The PRESIDENT: Time is getting on. If any one else has any detailed suggestions to make or questions to ask we should be grateful if they would communicate them in writing to the Secretary. Now I call on Dr. Willatts to reply to the observations that have been made.

Dr. E. C. WILLATTS: The Concise Oxford Dictionary has been called in evidence several times. In the Preface to that Dictionary there is an explanation of why it includes only a selection of scientific and technical terms and the statement that "A living language does not remain unchanged." I do not think therefore that we should worry if certain terms have been suggested which are not in that Dictionary. Last week Fellows heard a distinguished planner lecture to the Society, but I doubt if any who consulted the dictionary were troubled on finding that it did not include the word "planner."

We are much indebted to General Cheetham and General MacLeod for their contribution, especially for clarifying the Ordnance Survey standpoint and practice. Doubtless the Ordnance Survey will give careful consideration to the many points of detail which have been raised.

The Scots have been extremely helpful. On glancing through Dr. Geddes' memorandum I notice a definite leaning towards regional names. I think that he and I have taken somewhat different criteria as the bases on which names should be selected. I prefer to keep as closely as possible to relief names, or names of definite relief features, not because I do not like purely regional names but because I feel that the Physical Map is not the best place for them, especially as it will not have a topographic background. If the Director-General of the Ordnance Survey would give us a luxurious map, the regional names might be printed in another style and colour, but otherwise I think that most of them would be better on a map which combines physical features and topography and this, I think, would conform to Ordnance Survey practice. To illustrate my point: I cannot agree that the name Ayrshire should go on the physical map. It will however be found on all the other maps in the series. As I understand Dr. Geddes, if we accept some of his criteria as applicable to England as well as to Scotland, we should find ourselves putting on the physical map such names as Hallamshire, Richmondshire, Wessex, and East Anglia.

I would like to say how pleased I am that so many Fellows are coming forward with excellent suggestions, both in detail and principle. It is most gratifying, too, to find a reforming spirit abroad: an officer of the Ordnance Survey takes me to task for using the name Glen Strathfarrar, which I copied from the Ordnance Survey, and the Secretary of the Royal Geographical Society reproves me for using the name of Vale of St. Albans, which was put forward by the Society itself in 1904. Some speakers have criticized me for being too scathing about "Geographers' labels." My reply is to point to my defence of those good ones which fulfil a real need (*e.g.* Southern Uplands, Forest Ridges, Snowdonia, and perhaps Vale of St. Albans).

It seems that we are handling a subject which owes so much to tradition and history that it is very difficult to adopt an attitude of strict logical consistency, and many compromises will be essential. It is perhaps most difficult to see how we can effectively compromise over the linguistic problems without a dual name plate or a separate Welsh and Gaelic one. In any case, the Welsh scholars are not yet clearly agreed among themselves. I like the suggestion that, at least in Scotland, we should use anglicized forms, *e.g.* Ben and Moor rather than Beinn and Muir, but I realize that it is those in Edinburgh rather than London who have more claim to be heard on such matters.

Professor Miller and Dr. Stamp have spoken of the need for a physiographic map. I agree that there is a real need. It should occupy an important place in a National Atlas of Britain. A separate map of Regional names is also desirable.

Rivers have been mentioned several times, because some were shown on the outline map of suggested names. I would only point out that on that map we

stated that "Names of rivers have been inserted for the purposes of identification and are not necessarily those that will appear on the Physical Map."

The PRESIDENT: I am sure you will agree that we have had a very interesting and fruitful discussion. There seems a little difficulty about the nomenclature of East Anglian Heights which are not heights at all. Perhaps the word Rise would meet the case. I confess I agree with those speakers who like to see a pass named here and there, and think that for example the Brenner Pass is of more importance to mankind at the moment than the Matterhorn. My last observation is that, for good or ill, Grampian is for ever engraved in our language, at least for all those who learned in their youth that "on the Grampian Hills my father feeds his flocks." I feel that Grampian must be maintained. I have nothing more to say except to express our thanks both to Dr. Willatts for his very interesting paper, and to those who contributed to the discussion.

Further written contributions were received too late to be summarized in the Discussion:

Dr. IORWERTH C. PEATE and Dr. F. J. NORTH wrote from the National Museum of Wales: The principle that Welsh spellings should be used only for names in areas which are more than 80 per cent. Welsh-speaking is fundamentally unsound and will result in many difficulties and incongruities. The following rule is suggested: On a map intended for international use give English forms, *e.g.* Barmouth, Swansea, Cardigan, Lampeter, Snowdon, where such forms are well established; but where Welsh forms are commonly in use, *e.g.* Mynydd Presely, Pumlumon, Dyfi, Aberdyfi, these names should be spelled according to the Welsh orthography and the English misspellings should be discarded.

Brecon Beacons cannot be used as a substitute for Fforest Fawr, which is the name of a moorland region, formerly the Forest or Chase of Brecon. The latter lies west of the rivers Taf and Tarrell and is so marked on the quarter-inch O.S. map. Brecon Beacons on the proposed physical map covers both the region so named and Fforest Fawr. Brecknock Beacons is a more suitable term. A single name is not possible for the area of the South Wales Coalfield between the Vale of Glamorgan and the Brecon Beacons, since the coalfield area is distinct, geologically, industrially, and scenically from the region immediately south of the Beacons. For the upland region coinciding roughly with the coalfield Blaenau Morgannwg is available. If this is accepted Bro Morgannwg should be used instead of Vale of Glamorgan; the latter could be given in brackets or a synonym.

Snowdon is the name of the area marked as Snowdonia on the proposed map. Snowdon is the range, not the peak, which is known by local inhabitants as Y Wyddfa. In Giraldus Cambrensis' Itinerary chap. IX, "the mountains called by the Welsh Eryri but by the English Snowdon . . . rising to Degannwy in the north; indeed, opposite Anglesey they rise in high crests to the clouds." But Snowdon has been used to indicate a single mountain at least since the sixteenth century (Humphrey Llwyd) and a compromise might be considered: for the whole area, Eryri; for the single mountain, Snowdon; for the peak, Y Wyddfa.

To avoid confusion with the Black Mountains it would be better to give Mynydd Du for Black Mountain. Breiddin should read Breiddin Hills. Breiddin is the name of one of three peaks, of which Moel-y-Golfa is the highest. Cader Idris is the name of a mountain mass; the summit is Pen y Gader. Misspellings are: Glyder Fawr for Y Glyder Fawr; Carnedd Llewelyn for Carnedd Lywelyn; Carnedd Dafydd for Carnedd Ddafydd; and Moel Fammau for Moel Famau.

Parys Mountain is the only name given in Anglesey. This is not the highest hill, for both Holyhead Mountain in the west and Mynydd Bodafon in the east are higher. The history of the name is uncertain and sixteenth-century maps suggest that the height was originally called Mynydd y Dyryslwyn. Craig y llyn should be added in Glamorgan; it is the summit of a ridge that is very important scenically, geologically, and culturally. Skirrid Fawr near Abergavenny should also be added, though the spelling of the name should be checked by the Board of Celtic Studies. Rhinog Fawr and Arenig Fawr are listed under Moorlands and Uplands, this is misleading as each is the name of one of a number of heights. Mynydd Hiraethog should not be used as if it were synonymous with the whole of the Denbighshire moors.

The Vale of Powis is a completely misleading and artificial name, which one of us (I. C. P.), a Montgomeryshire man, has never heard. The course of the Dyfi should be indicated. The river marked Rhondda includes part of the river Taf(f) and the course of the Taf(f) above Pontypridd is omitted. The correct form is Taf. For Towy read Tywi and for Ebbw read Ebwy.

The region Lleyn should read Llŷn. The name Gwent is misplaced; it should describe the whole of Monmouthshire, not merely the coastal plain.

Mr. S. H. BEAVER wrote: While, as a geographer, I am in full sympathy with Professor Miller, who wants a map that will be useful mainly to professional geographers and perhaps geologists also, as a standard work of reference for scientific description of landscape, I am also, as a colleague of Dr. Willatts, conscious of the necessity of providing local planning authorities with a reliable guide to the names in current use. Moreover, since the Director-General has stated that only names locally recognized and used can be employed, it is clear that our geographers' labels will have to be dropped. But I think this discussion has proved the vital necessity of a supplementary physical map, such as Professor Miller suggests, which should form one of the first sheets of the National Atlas.

It is worth while inserting the names of dales, *e.g.* in Yorkshire, because the rivers that flow down those dales have a plains course also and it is desirable to indicate the extent of the true dale. While I agree in general with Mr. Hinks' opinion about the use of the term Vale, yet I think there is some justification for the use of the word to denote shallow troughs which, though they may drain in two opposite directions, are yet geological entities. The Vale of St. Albans drains to the Colne and the Lea, but there is no doubt that both portions form part of a single physical unit, which needs a single name.

Welsh pronunciation is much easier than English, for every consonant, vowel, and diphthong has a constant phonetic value. Most geographers these days are meticulously careful in the way they write and pronounce foreign names, so why not Welsh also?

Mr. J. FAIRGRIEVE wrote: The physical features of a country are not odd things dotted about all over the country; the sum of them makes up the country. When a map is constructed to show the physical features of an area no part of the area can be left out of account; when any of the features of the first order of magnitude is divided up the same principle applies. These axioms apply to other maps of the same kind.

A scientific map to show the physical features of Britain for no ulterior purpose is desirable and does not exist. I suggest that what is true of triangulation maps is true of such a physical features map, that the features of first order of magnitude are the most important. It would appear that in a physical features map the larger highlands and lowlands, together making up the whole of

Britain, should certainly be delimited and named, though names do not exist in every case. Their subdivisions again, mountain masses and valleys, hills, plains, and lowlands of the second order pretty certainly should be delimited and named, there being in any subdivided unit no area left out of account except, perhaps, in very rare cases. How far the subdivision goes depends on the scale of the map, but again the actual summits, as distinct from the mountain masses of which they are summits, would not be named. On the scale of the present map they are too small. In the absence of contour lines it is a little difficult to be quite sure of this, but if one can judge in the case of Arthur's seat the scale of the map is certainly too small. Actually in Britain the summits are the features about whose names there is least doubt. But I suggest that the aim of such a map should be to carry the subdivision as far as the scale allows. It does not appear that in the present map it has in all cases been carried far enough. All features which are delimited should be named; many have no names and some names are unsatisfactory, but change will be difficult.

The Central Lowland of Scotland will pretty certainly retain its name, though it is not a lowland at all except in the sense that most of Britain is a lowland. The ridiculous name of Pennine Chain is in universal use and I doubt whether Pennine Moorlands would catch on, but the name Pennines which is commonly in use might, in Dr. Willatts' phrase, be canonized. I would go farther and canonize not only Cotswolds but Quantocks, Cheviots, Sidlaws, Lomonds, Cairngorms, Lammermuirs, Moorfoots, Pentlands, and others. Scafell Pike rather than Scafell should be named; it is the highest summit in England. Braeriach and Cairntoul, respectively the third and fourth highest in Scotland, and quite distinct from Ben Macdhui and Cairngorm, have claims. Edenside is a better name, for the whole lowland between Crossfell Edge and the Lake District, than the Eden valley, which is only part of it. The Southern Uplands, under the influence of geologists, is obviously inaccurately shown.

Mr. L. C. W. BONACINA suggests that the chalk hills of Wiltshire and Berkshire between the Kennet Valley and the Vale of the White Horse should be called the White Horse Hills or Downs. At present the name is mostly confined to White Horse Hill itself upon which the figure is cut. This chalk block forms something of a structural unit distinct from the Chiltern Hills from which they are separated by the Goring Gap of the Thames.

Nomenclature is loose and fragmentary for many of the Greensand ranges which run parallel with the North and South Downs. Thus the high range south of Sevenoaks (one of the most impressive features in the south-east of England, necessitating a railway tunnel 2¼ miles long) now loosely termed the Ragstone Range would be much better named the Ide Hill Range from the village perched 700 feet high steeply overlooking the Weald of Kent. Similarly the unnamed conspicuous high ridge north of Midhurst, Sussex, might be called the Midhurst Ridge.

A high ridge along the Devon–Somerset border is known as the Blackdown Hills, and the name should be extended to embrace its ramifications forming the hilly country around Honiton, Axminster, and Chard.

In the heart of Northumberland there is a wide area of elevated crag-riven moorland more or less unnamed, except for locally restricted usages such as Bewcastle Fells and Simonside Fells. This hilly tract is neither Cheviot country nor true Pennine country, and might be named the Mid-Northumberland Moors.

The name originally proposed by Dr. Mill of the Forest Ridges for the central Wealden heights is singularly fortunate and should be extended to cover all the forested hill country stretching from St. Leonard's Forest through

Crowborough, Ashdown Forest, Tunbridge Wells, and Battle to the sea at Hastings.

Mr. A. C. O'DELL wrote: Dr. Willatts has introduced a topic rather alien to this country, the canonization of our relief names. In countries such as Belgium where the adoption of the Flemish or French form was a source of bitter contention more has been done in fixing the form to be used officially. In Great Britain the name taken is that resulting from many centuries of use and corruption. Such stabilization as we have has resulted from the Ordnance Survey, the Post Office, and the railways covering the country in the last century and needing to adopt fixed forms for the convenience of users.

In Scotland the problem has been complicated by the wide area with Gaelic names about which there has been little agreement in spelling. Unfortunately Gaelic is not spelled phonetically but, as Professor Mackinnon expressed it, by "the strict and highly artificial rules of the [language] schools." This being so one arbitrary system must be adopted until the Gaelic scholars can agree among themselves. Whatever the experts like to think from my experience it appears that the vast majority of map users are not antagonized by conventional names, even though these are linguistically incorrect. It would seem that the spellings adopted by the Ordnance Survey, although they give no help to pronunciation, are the most expedient to use at the moment. The Ordnance maps provide the master series for the country and have the greatest circulation. This generation will, through their military training, have become accustomed to the names adopted by the Ordnance Survey.

As regards the provisional map produced I have already communicated to Dr. Willatts the minor points I wished to make about particular names. One general addition I would like to see is the inclusion of mountain pass names, for these are often more significant then the negative hill areas they cross. Obviously on a map of this scale only the chief passes, as, Killiecrankie and Drummochter, can be given. I am sure that this map produced in Dr. Willatts' Department will be most useful in providing a common basis of nomenclature for future work on this country.

AN UNRECORDED BLAEU WORLD MAP OF c. 1618

EDWARD HEAWOOD

DESPITE the amount of research devoted during the past half-century to early maps and their history, a good many finds of lost or forgotten documents no doubt remain to be made, and to report one such is the object of the present note. Early Dutch cartography had been so assiduously studied, in the years before the war, by our Hon. Member Dr. F. C. Wieder that important new discoveries therein could hardly have been expected. Yet the map in question came from the hand of one of the most noted craftsmen, Willem Janzy Blaeu,[1] in the most brilliant age of Dutch map-making—the first half of the seventeenth century. It has been (recently at least) in private hands in this country, which may explain its escaping Dr. Wieder's searching eye. Through the courtesy of its present owner, Squadron-Leader W. A. Foster, of Claverton Manor, Bath, we have been permitted to examine it at leisure and to give here a brief account of its main points of interest, both in itself and as compared with contemporary maps already known.

It is the finest examples of such old maps that have least chance of surviving, for their full beauty and practical value can only be enjoyed if they are displayed at one view as wall-maps. Even if surviving at all they are so often in such damaged state as to be hardly legible in places. The present specimen has almost entirely escaped such damage, through having, within thirty years of its production, been cut up into small sections, these mounted on card, and, while each remained free to be handled separately, protected as a whole by stout calf covers, stamped in the style of the period. We can be thankful for such early treatment (though at first sight it might be put down as a piece of vandalism), which at least permits the map to be seen in one view when suitably arranged—an impossibility with various specimens in which the original sheets have been firmly bound together as an Atlas. There are thirty-two such sections, each measuring less than 1 foot square, and the present form was due to a German owner in 1645, one Gervase Max Müller it seems, who has added within the covers a short index of the principal places of the world, marking on the back of each section its serial number and, on each of its four margins, the number of the section adjoining, thus greatly furthering the practical use of the map. He has also named on the back of each part the outstanding geographical features therein included, in the places corresponding to those occupied on the front.

As regards the external form, one or two further points may be noted. With a view, no doubt, to keeping the size within handy limits, any ornamental or pictorial border that may have existed outside the rectangle enclosing the two hemispheres into which the map is divided has unfortunately been cut off, and one cannot say what may have been the nature of such border. In some other maps, such as the Hondius map of 1608 now owned

[1] It should be noted that the maker did not add the third name to his other two till well on in his career, and it does not occur in the signature of the present map. Dr. Wieder thought that a map assigned by him to *about* 1617 was the first to appear under the name Blaeu.

by the R.G.S., the wide pictorial border was printed apart from the map proper, on independent strips of paper, eventually added when it was mounted as a whole. Even the narrow ornamental border was printed, along the top, not with the map, but with the fairly wide strip which includes the bold title, this too being printed apart from the still wider pictorial border. If this was done with the present Blaeu map, we have no clue to the nature of the lost parts. But the 1608 map was on Mercator's projection and therefore any extraneous embellishment had perforce to be quite outside the map rectangle. In other hemisphere maps, such as the Blaeu of 1605 and the Hondius of 1611–18, where so much unused space remained within the spandrels (if an architectural term may be permitted) it would have involved great and unnecessary expense to print a separate border; the pictorial border, we find, impinges on the circles, and does not form a complete strip, the whole rectangle having apparently been engraved in symmetrical sheets. Even if a border was printed separately it does not quite follow that it would always be present at the outset, for it may have been supplied or not to suit the taste, or purse, of the purchaser. The trimming in the present instance may have caused therefore no loss but that of a narrow conventional border of strapwork or other ornament.

The way the original sheets of the map, as printed, were fitted together can be traced from the lines of junction. It is rather puzzling to find that the small existing sections conform neither to edges of the original sheets, nor, uniformly at least, to those of their backing paper. It seems probable therefore that the map was originally made up as a wall map and only later cut up into small sections. The arrangement of the printed sheets and therefore of the engraved copper-plates is peculiar. A complete east–west line of division runs, not along the equator but some 10° south of it. The northern part is printed on four large sheets, two at each end, with the longer side vertical, and a narrow one, also vertical, between. South of the horizontal line, where the space is too small for vertical sheets, it is covered by three full-sized sheets placed horizontally, with part of another in the south-west corner. Economy of paper may have been the reason for this: Blaeu possibly had a stock of a size too small to fit any symmetrical arrangement, the sheets being, we find, a good deal smaller, at least as trimmed, than those used by him for his Atlases or for his large maps of continents. The large stout paper used somewhat later for the Blaeu Atlases was evidently specially made for the purpose, its unusually large watermark representing Atlas upholding the World. The younger Blaeu, Joan, seems to have acted as agent for the supply of paper in Amsterdam (see Churchill 'Watermarks in Paper,' 1935, p. 23), but the Atlas paper was probably made abroad. Besides the figure of Atlas we find also the elephant with the letters IB (? Joan Blaeu) and the pairs of letters IB VE, the latter perhaps standing for Veuve, as in other cases. This might seem to imply that Joan Blaeu ran a mill or mills of his own, and there was a noted family of paper-makers of the name in the eighteenth century. Henry Hondius certainly imported French paper, as we find the French place-names Limoges and Vitré watermarked in one of his Atlases. Alternatively the irregularity might perhaps be due to the size of copper-plates available at the moment.

To come now to the contents of this unrecorded map of 1618. The gen picture closely resembles that presented by others of the time, including Blaeu's own of 1605 and Hondius' of 1611–18, these two also showing agreement, even to scale. Blaeu's of 1618 is on a smaller scale, roughly th fourths, the equatorial diameter of each hemisphere measuring about against $47\frac{1}{4}$ inches. It now bears no date, the loss of its title having prob removed the date also. But there is internal evidence to place it as 1 and thus almost exactly contemporary with Hondius' as we know it. prominence given to Schouten's voyage (with Lemaire) of 1615–17, both the careful marking of his whole route and discoveries, and by giving portrait a special place of honour among the six circumnavigators, mak almost certain that it was not completed till after that navigator's retur July 1617 (with Speilbergen, his colleague Lemaire having died on the vo home), while the first printed account of the voyage was not published Blaeu himself, till 1618. The glorification of Schouten was on a par with o early attempts to extol his merits to the neglect of Lemaire's; an error a wards rectified. It might perhaps be supposed that the map was issued pendant to the printed narrative of 1618, but its imposing form, and the i at about the same time of Blaeu's large maps of the continents, argue for more generally useful purpose. Its publication can hardly have been later t 1618, for two reasons. First Hudson's discoveries of 1612–13 are spoken o lately made; and second, in dwelling on the extent of discovery accomplish since Columbus' first voyage the time interval is spoken of as one hundr and twenty-five years. That number was perhaps a round one only, or t date of issue would have to be put as 1617.

As with other hemisphere maps of the period the projection used is t stereographic. In his choice of a prime meridian Blaeu makes a new departu discarding that through the Azores (San Miguel or some less definite poi previously used by himself and others, in favour of the Peak of Teneri giving his reasons in a special note, to be found also in his large map America. The hemisphere map may have been the first to make the chan and thus set a fashion adhered to by the Dutch for many years.[1] In 1 Blaeu had made the division between the hemispheres coincide with prime meridian, but he could not do this after changing the latter with upsetting his whole picture, and he therefore drew his 360° ten degrees of the dividing line.

The date 1618 places the issue of Blaeu's map in the very year assigned Stevenson and Fischer to the *second* state of Hondius' big hemisphere m in the belief that it had originally appeared about 1611. Their reasons fo first issue in 1611, based chiefly on the failure of the map to mention Hudso discoveries of 1612–13, and the supposition that it was entirely the work the elder Jodocus Hondius, who died in 1611, are not altogether convinci The preparation of the map may have taken several years and the Ar section at the top may not have been quite up to date at the time of issue

[1] The original issue of the large maps of the continents seems to have been in 16 but the America is not now known. Mr. Perrin in his summary of the history of Prime Meridian (see *Journal*, 70, p. 92) quotes Blaeu's globe of 1622 as having star the practice.

Fretum Magallanicum
Patagones
Terra de Maria
Terra Desire
Tierra del Fuego
Los Cerronados
Los hujus incolæ procera
Fretum le Maire a Willelmo
Schouten Hollando
Primus Anno 1616

NOVA
FRAN
C I A
TEN
IS
Avacal
Avanates
Albardos
Apalchen
Mocosa
Houguelo
Nouvelle
Sinus
Mexicanus
Cuba
Jamaica
LA FLORI
DA
VIRGINIA
Sanawandon
Tagul
Cosla
Aix
Chaque
Chillaire
Avaqui
Guacola
Calaqui
Chichaly
Chaches
Cumanon
Fili
Apalatey m.
Nouvelle
Sinus
Canadensis
Lauren
Ste Croix
Ste Paul
Sable
Francois
Tortugas
Roca
Mariguana
Abrolhos
Tamaio
Vega
Salty
Caimanes
Tortuga
Columel
Triangula
Arenas
Sarca
Tavasco
Tabasco
Vera Cruz
Panuco
Tampico
Almeria
Xalapa
Mexico
Acapulco
Guatimala
Nicaragua
Honduras
Yucatan
Campeche
Golfe de Mexique
Golfe de Nicaragua
Golfe de Honduras
Golfe de Yucatan
Golfe de Campeche
Golfe de Panuco
Golfe de Tampico
Golfe de Tabasco
Golfe de Vera Cruz
Golfe de Xalapa

this was late enough to permit a sketchy representation of Le Maire Strait in the lower part. However the two maps are contemporaneous in their present state, and a comparison of their contents presents some points of interest, though rendered difficult by the damaged state of the Hondius map.

On matters of Mathematical and Historical Geography the maps of the two rivals show too much general similarity to permit the idea that they were independently produced. This is to be seen, for example, in the directions for measuring distances and the diagrams illustrating them, though both differ considerably. But the larger size of the Hondius map gave rather more scope for instruction in such matters, and in particular it seems to stand alone among maps of this class in its records of the deviation of the compass and the direction of ocean currents. One special feature in the Blaeu map is the small world-map in hemispheres distinguishing the lands known to Ptolemy from the recent additions to knowledge, with the accompanying text emphasizing such additions. Outside the map proper Blaeu retains the north and south star maps already given by Plancius in 1592, while Hondius omits them.[1]

Of the general world geography there is not much to be said, for it is much the same on most maps (at least the Dutch) of the period. Any special features naturally refer chiefly to the new discoveries in outlying parts of the world. The record in the Blaeu maps of Hudson's discoveries has already been touched upon: it includes a discussion of the possibility of a passage to the Far East across a supposed "open ocean" west of Hudson Strait. In Greenland, the map ceases to show the "Frobisher Strait" supposed to cut off the southern extremity but gives the name to an inlet on the east coast. Newfoundland is well shown, perhaps on the basis of the special map ascribed by Wieder to Plancius (about 1592), but it improves upon the latter in discarding Mercator's picture of the continental coast to the north. On the St. Lawrence, it is perhaps the earliest of the Dutch maps to mark Quebec, previously shown on the French MS world-map of Levasseur, 1601. Farther west the supposed oceanic coast, coming down to nearly 40°, is omitted, though retained by Hondius. In the Arctic north of Europe, our map discards the name Nieuland, originally given to Spitsbergen, and adopts the latter name, first seen on Gerritz's maps of 1612–13; and it shows some approach to the "Blaeu type" of Wieder, more fully developed in Blaeu's sea-atlas of 1623. The hypothetical lands between Spitsbergen and Novaya Zemlya are judiciously discarded, though still to be seen in Joan Blaeu's great map of 1648.

In Eastern Asia, Blaeu, like Hondius, adopts the picture of China originally given by Ortelius in his Atlas, but falls behind Hondius in still showing Korea as an island. The Malay region is fairly well shown, as in other contemporary Dutch maps, probably on the basis of Plancius' special map of about 1594. In western North America its record of Drake's discovery of Nova Albion is fuller than in other big Dutch maps, but we find no mention of Raleigh in either Virginia or Guiana. On the whole no very marked im-

[1] In comparing these rival maps it must be remembered that both may have borrowed more largely from Plancius than we can at present discover, since the latter's large world-map of 1607 is now lost.

provement over its rival is to be seen in Blaeu's 1618 map, as was perhaps hardly to be expected.

As regards the pictorial embellishment, Blaeu strews his map proper with the usual pictures of ships, marine animals, mermen and mermaids, and so on, all of distinct artistic merit, but not otherwise exceptional. On the land surfaces some of the same pictures, such as those of the Patagonian giants, had previously appeared elsewhere. It is in the outside additions for the purpose of decoration that the two contemporary maps differ most markedly, each striking out a new line of its own. While Hondius fills the "spandrels" with biblical personages and scenes, one being the delivery of the law on Mount Sinai and the wrath of Moses on finding music and dancing going on when he descended, Blaeu's pictures are purely secular. The four corners are here occupied respectively with scenes of dancing, harvesting, vintage, and skating, perhaps meant to illustrate the four seasons. In the foreground of each is an imposing figure watching the scene and associated with it in character, the chief watcher of the winter scene recalling the conventional Father Christmas. The larger parts of the interhemisphere spaces are occupied by the star maps, but these leave room for human figures, with animals, trees, and fruits. Those in the lower spaces represent respectively a female figure pouring a water-flood out of an amphora, and another pouring out fruits from a cornucopia, both to become so hackneyed in later times. One of the upper figures is a man toying with a tame lizard, and makes a pleasing picture.

One drawing in each set, and one only, does imply some interrelation between the two, and one cannot think them drawn quite independently: namely those showing an open-air round dance with minstrels in the background. The secular scene shows a close general resemblance with the biblical, that is with the parts of the latter showing the dance. This seems puzzling at first sight, but a possible explanation may be hazarded. It seems to be accepted that, for the pictorial embellishment of their maps, the makers sometimes employed otherwise well-known artists, who supplied the pictures to order.[1] If, as is likely, they drew to some extent on their private repertory, it would be only natural that pictures in different maps by the same artist might show similarities when the subjects required were cognate, as were the dancing scenes. Or the map-makers themselves may have copied from well-known pictures.

Finally, the maps here considered suggest an interesting question of the position at the time of copyright in maps. Map-makers constantly applied for a "privilege" giving them a monopoly of sale for a limited number of years, usually ten or twelve. Blaeu's maps of 1605 and 1618 both print the terms granted for such exclusive rights, and severe penalties for infringement are referred to. Yet, as we have seen, other makers, especially Hondius, did copy Blaeu's maps to a large extent, though, as the earlier large maps of Hondius are lost, it is possible that Blaeu himself had copied in the first instance. One is tempted to think that the rights granted may have remained almost a dead-letter. A possible explanation is however that a mutual arrangement between the makers was reached, as is even suggested by the proviso in the "privileges"

[1] Wieder ('Monumenta Cartographica,' Part 3, p. 68) has suggested that artistic features in some Dutch maps may have been the work of the younger Saenredam.

that neither copying nor importation of similar maps was permissible except with the consent of the grantee. Dr. Wieder has in fact found indications of a certain cooperation between Hondius and Blaeu in that certain maps he has examined bear sometimes one name, sometimes the other ('Monumenta Cartographica,' Part 3, 1928, pp. 69 and 81).

MINIATURE SPITS AND EMBANKMENTS ON A LAKE-SHORE, ICELAND

W. V. LEWIS

A SERIES of miniature spits and embankments examined during a Cambridge expedition to Iceland in 1937 simulated to a high degree their greater counterparts round the British coasts. It seems therefore that scale reductions of 10 or 100 to 1 do not materially affect the mechanism of spit-building. The lake occupied a mountain-girt hollow in the eastern foothills of Snaefell, East Iceland. It is shown in Fig. 1, taken from a plane-table survey made by Lieut. J. N. Jennings. The bare steep slopes yield large quantities of sand and gravel, and extensive delta flats encroach on the lake. Abundant supplies of shore material are thus made available, and a variety of depositional shore-forms have resulted.

The most striking shore feature was the storm beach ridge (Plate 1) which extended the full length of the eastern shore. It was terraced on its lakeward side (Plate 2) by as many as eight lesser beach ridges. It reproduced both in plan and profile countless features possessed by the far greater storm beach ridges round the British Isles, such as the Chesil Bank (Plate 3). The highest ridge rose 15 inches above lake-level, and the width of the embankment varied from 17 to over 30 feet. The back of the bank was corrugated by a series of shingle tongues, formed, like their counterparts at Chesil, Dungeness, etc., where storm waves had broken through the embankment locally, and washed tongues of shingle down the landward side.

The profile of such embankments is now largely understood, and can be closely examined in the wave trough of the Cambridge Physiographical Laboratory, on a scale little smaller than that shown in Plate 2.

The close relationship between the height of the embankment and wave size is shown by the heights (in inches) given in Fig. 2. The size of the waves depends on the strength of the wind, and the stretch of water over which it blows. To produce the largest breakers the waves must not be very oblique to the shore or their power is dissipated over a wider extent of shore, and energy also seems to be lost in swinging round to break onshore. Depth of water immediately offshore is also important, but this is chiefly determined by the dominant (or largest) breakers, being deeper where the breakers are large than where they are small. The bank was highest (15 inches) at its southern end where it faced north-west, towards the greatest stretch of water and the maximum exposure to wind. Farther north the bank gradually

swung round to face west, and its steady reduction in height, to 12 inches, corresponded with a shorter stretch of open water, and more shelter from winds. The readings (in inches) at 100-foot intervals from south to north are $13\frac{3}{4}$, 15, 14, $13\frac{1}{4}$, 14, 13, $11\frac{1}{2}$, $12\frac{1}{2}$, 13, 12, 12, $11\frac{1}{2}$, $12\frac{1}{2}$, 12, 11, $10\frac{3}{4}$. The slight maximum of $12\frac{1}{2}$ near the northern end might have been due to winds through the pass in the south-west corner of the map.

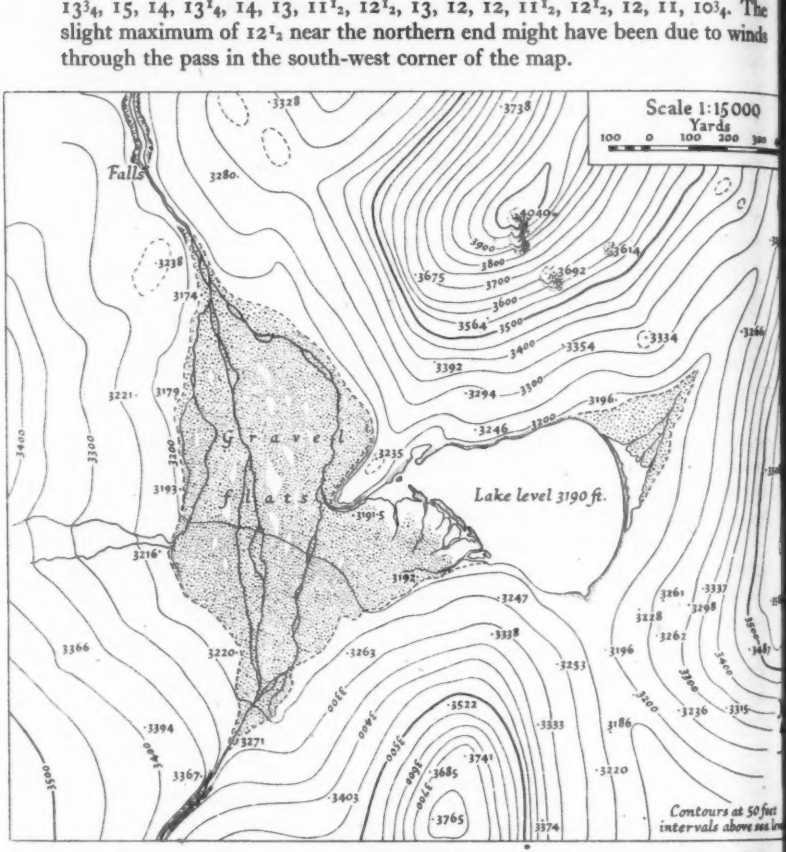


Figure 1

Embankments such as these tend to be parallel to the largest breakers, and this seems to be borne out by the case under discussion.[1] Wave conditions in a small lake are extremely simple compared with those of the seashore. The position of the gaps (Fig. 1) probably determines the direction of the strongest winds, which are powerful. The greatest stretch of water from any point on the shore usually passes near the centre of the lake; the waves from such a direction also cross the deepest water, and so are least impeded by

[1] W. V. Lewis, "The effect of wave incidence on the configuration of a shingle beach," *Geogr. J.* 78 (1931) 130. Also "The evolution of shoreline curves," *Proc. Geol. Ass.* 49 (1938) 109.

bottom friction. In Fig. 2 lines are drawn perpendicular to the shore at intervals of 400 feet; they all pass near the centre of the lake. This smooth sweeping bank is the more striking as it does not harmonize with the contour of the bounding slopes or with the delta forming in the north-east lagoon.

The outline of a bank closed at both ends is not dependent solely on the dominant breakers; the lesser but far more frequent waves of calmer weather are largely responsible for distributing material along its front. The lake bank was very uniform in width, everywhere tending to face the prevalent waves, and thus receive an even distribution of beach material.

The broken offshore bar on the west side was not concave, but straight or even slightly convex. It faced approximately north-east, towards the greatest

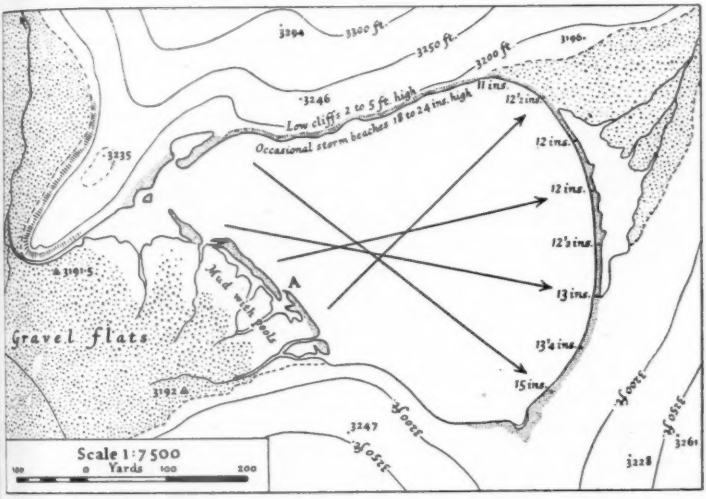


Figure 2

stretch of water and the low col (Plates 1 and 2) lying to the north-east. The convexity was most marked at its southern end and is probably due to the bar having formed on the lakeward fringe of a delta the natural outline of which is indicated in Fig. 2 by the landward margin of the nearly continuous lagoon behind this bar. That the shallowing offshore is only the subsidiary factor in determining the direction of the bar is shown by the spit at the north-western end, which maintains its direction though it leaves the delta-front, and extends independently about 50 yards into deeper water. This end of the composite bar, with its wavy front (Plate 4), was probably not completely adjusted to wave exposure, for it did not face a wide stretch of water: to be fully adjusted it would probably have to face more to the east. The fact that the bar was both broken and staggered, and yet each section closely maintained its direction, shows the potency of the directional factors.

Plate 5 shows the simplest case of spit-building. The small spit was attached to the landward side of the eastern bar, and so had been built by

wavelets developed in the restricted waters of the lagoon. The spit continued the direction of the shore beyond a sharp bend, but soon receded, forming a recurved end as it entered deeper water. When the photograph was taken very oblique waves, formed in the lagoon by a southerly breeze, were drifting the finer material towards the end of the spit. These waves, already much reduced in size in the shallow water a few feet offshore, became mere ripples as they swung round the end of the spit, leaving almost smooth water to leeward, and deposited the drifting material just off the end of the spit.

The form of the upper of the two ridges cut in the shore leading to the spit suggested that the spit was built at a higher water-level, and by waves nearly parallel with the main section of the shore. When the photograph was taken the water draining from the lagoon had cut a channel about 9 inches deep through the bar. The simple curve on the spit is probably due mainly to the waves which built the upper ridge. The advancing send or swash seemed to drive back landwards the less substantial distal end of the ridge where it overlapped the point and so formed a fine, though miniature, example of a simple recurved end. This probably represents the simplest case of spit-building by onshore waves using material previously supplied by oblique waves similar to those shown in the photograph.

The composite spit at A in Fig. 2 is shown in Plate 6. When the photograph was taken a fairly stiff breeze was blowing from the east and the small waves, slightly oblique to the main shore, were drifting material to the end of the spit. The slender end of the spit was being built at this time. The contrast between this straight end and the recurve shown in Plate 5 is probably due to the difference in depth of water off the end of the spits. With relatively deep water (Plate 5) waves can swing freely round the end of the spit and so drive back the distal end, but with shallow water the wave-fronts get equally retarded off and just beyond the spit end and so they remain fairly straight.

I suggest that lateral ridges are formed when the end of a spit is exposed to wave-fronts markedly oblique to the line of the main spit. Fig. 2 shows that the end of the spit at A is open to quite large waves from a northerly direction, and these waves have driven back the main lateral shown in the centre of Plate 6. Once a storm from the north has driven back the end of the spit, storms from a more easterly direction can never straighten it again.

The similarity between the lake-shore spit of Plate 6 and the Far Point of Scolt Head Island[1] (Fig. 3) is most striking, though the latter is fully one hundred times larger, and Scolt has a considerable tidal range and strong tidal currents. But relative exposure to waves and configuration of bank and spit are very similar and suggest that great scale reduction does not change the mechanism of spit-building, that wave exposure, not tidal action is the fundamental factor, and that exact reductions in grade of material are not essential.

A similar but much stronger lateral occurred at the northern end of the main central portion of the west bar (Fig. 2), but this showed signs of having been turned twice if not three times. The corresponding spit at the end of the

[1] J. A. Steers, "The East Anglian Coast," *Geogr. J.* 69 (1927) 30. 'Scolt Head Island.' Cambridge, 1934. "Minor changes in shingle-spits and the value of regular mapping," *C. R. du Congr. Internat. de Géogr., Amsterdam*, 1938, p. 172.

1. Miniature storm beach ridge or bank on eastern side of lake

2. Storm beach ridge shown in Plate 1

3. Chesil Bank from Portland, a large storm beach ridge

4. Miniature bars on western side of lake

5. Embryo spit in lagoon

6. Miniature composite spit shown in centre of Plate 4

next section of bar to the west had no recurved end or lateral whatsoever, even though it extended into open water providing ample room for the growth of laterals. In fact the extreme tip turned slightly towards the north, *i.e.* lakewards, not landwards like the others in response to the dominant waves. This absence of laterals corresponds with the absence of oblique northerly waves due to the proximity of the steep shore off the end of the spit.

The relatively large spit in the north-west corner of the lake continued straight for about 80 yards and faced, almost exactly, the greatest available stretch of water and a conspicuous gap in the ring of hills. Its direction accorded well with that of the dominant waves, but probably not with that of the prevalent waves, which would almost certainly come from a direction

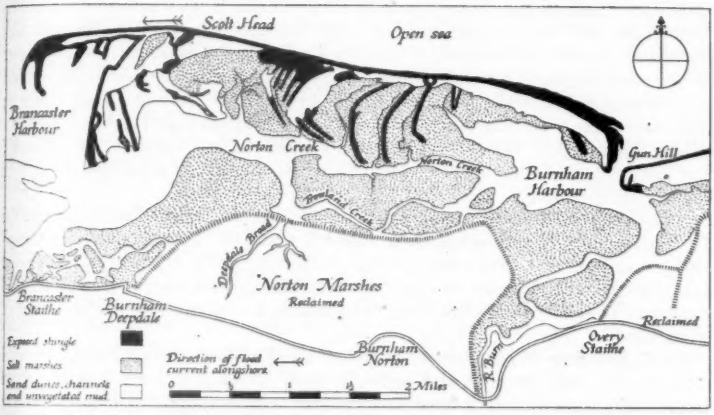


Fig. 3. Structure of Scolt Head Island in 1907, adapted from F. W. Oliver (from G.J. 69 (1927) 31)

passing nearer the centre of the lake, and would drift material to the end of the spit. There was insufficient open water off its end to allow waves of any size from that direction and so no laterals had formed. Longshore drift had produced a slight thickening at the end of the spit, marking the deposition of material as the waves weakened in swinging round the end of the spit. This has been noted elsewhere, particularly at Calshot Spit, where also no laterals occur.

The lake-shore between the ends of the two westernmost spits was a storm beach resting against the mainland. It formed a short arc facing the middle of the lake, though this necessitated its turning out from the coast behind. This curve was continued in the lakeward shore of a detached island of gravel.

Much of the field-work for this paper was carried out on the Cambridge Expedition to East Iceland, 1937. Grants towards the cost of this expedition were received from the Royal Society, the Royal Geographical Society, and the Worts Fund of Cambridge University. The members of the expedition wish to record their indebtedness for this financial assistance. I am indebted to Lieut. J. N. Jennings for surveying the area, and to all members of the expedition for assistance with the field-work.

PLACE-NAMES OF SVALBARD

THE PLACE-NAMES OF SVALBARD. *Skrifter om Svalbard og Ishavet*. No. 80. *Norges Svalbard-og Ishavsundersökelser, Oslo*, 1942. 540 *pages; map*. *Kr.* 50.00

MOST features of the coasts of Spitsbergen, especially the north and west coasts, have more than one name: many have three or four not to include corruptions and misspellings. From the voyages of Barents in 1596 and Hudson in 1607 names have been multiplying and confusion has been growing. During the whaling days of the seventeenth century the English skippers were more enterprising than the Dutch, but few English maps were produced. One however was of importance and recorded a number of English names: that was the Muscovy Company's or Edge's map of 1625. Dutch maps were more numerous and continued to be produced into the eighteenth century, and naturally recorded many Dutch names. The early English and Dutch names were often descriptive as Steyle, Schoon, Green, etc., some indicated features of navigation and resources, as Fair, Foul, Fowl (Vogel), Whale (Kval), Bear (Beer or Björn); others were associated with ships and skippers, as Hope (Hopewell), Klaas Billen, Edge, Wiche, Van Keulen, Eenhoorn; and others again indicated the nationality of the users of bays, English, Danes, Hamburger, etc. The history of Spitsbergen was being written in its place-names.

The period of Russian trappers that began in the eighteenth century, and the later period of Norwegian trappers, added few names. Trappers were not map-makers and their interests were not to make public the whereabouts of good hunting-grounds. Russe- in many names records this usage, but nearly all names of Russian origin date from the Russian Arc of Meridian expeditions of 1899–1901.

Scoresby's map of 1820 tended to perpetuate English names including several mistakes in both location and spelling. And about this time English naval expeditions were adding a number of names with little regard to pre-existing nomenclature. It was not however until about the middle of the nineteenth century that the spate of names began. Swedish work led to exploration of most coasts but particularly the west, and initiated a growing interest in the country. Swedish names were drawn from a wide field. Many were personal, others descriptive, and some were from places in Sweden. Dunér and Nordenskiöld's map of 1865 supplanted Scoresby's map and was incorporated in the first Admiralty Chart (2751) of 1865. English yachtsmen, Lamont, Pike, and others added a few names: the British Training Squadron left its mark on the map, and Petermann, in compiling maps of the east from fragmentary records, used the names of British scientists and German explorers of Africa. Thus a number of what might be termed extraneous names appeared on the map, *e.g.* Thomson, Bates, Johnston, Barth, and Schweinfurth. Henceforth for many years the Admiralty Chart remained the standard map and in successive editions incorporated new names, generally in English versions.

It was not however until the expeditions of Martin Conway in the last decade of the nineteenth century that the exploration of the interior was seriously begun, though Norwegian trappers must have known much that they never revealed. Hypothetical Inland Ice began to be replaced by details of topography. Conway's names, where he could not find an old name, were largely descriptive. In the present century a new phase of interest in Spitsbergen was inspired by its coal deposits which led to further exploration and many new and often redundant names. These interests helped to dispel the old

fallacy that Spitsbergen's latitude involved danger and impediment in travel. Better technique and the conquest of scurvy brought an age in which men were less timorous of polar lands and seas, with the result that the mapping of Spitsbergen and the additions to its place-names proceeded rapidly. Foremost in this century was the work of Norwegians, originating at the instance of the Prince of Monaco, and later becoming a State charge. Also noteworthy were W. S. Bruce's mapping of the long-forgotten Prince Charles Foreland and the Oxford expeditions of F. G. Binney and A. R. Glen to the north coast and North East Land. Not a year passed, until 1940, without several expeditions being in the field. The earliest Norwegian maps, known as the Isachsen maps (of 1906–07) were published by the Prince of Monaco in 1912 and introduced many new names, all in French versions, while many French names were added by the Prince of Monaco in Red Bay (Raudfjorden). Swedes also made many sectional maps with their own names. Bruce introduced, among the many names needed in the Foreland, a few of Gaelic origin. From time to time, in small areas, German names were added. Thus in a country without native names and with no controlling authority, until Norway was given sovereignty in 1920, the place-names present a bewildering complexity.

In 1906 Conway in his 'No Man's Land' made an attempt to produce order out of this chaos by tracing every name to its source and adopting the version with historical priority: a sound principle no doubt, but one that led to some unworkable results in the substitution of forgotten names for others hallowed by long usage. Thus Storfjord (one of the few Norwegian names of the past) became Wybe Janz Water; Van Keulen Bay, Sardam Bay; Liefde Bay, Wiche Sound; and Wijde Bay, Sir Thomas Smith's Inlet. On Norway taking over control of the islands the problem was approached anew. The first result was the appearance of unfamiliar versions of many names on the new Norwegian Charts, the first of which had appeared in 1919 (No. 303), that is to say a year before Norwegian sovereignty. On this however many English names remained. Later came a new series of charts, 503 to 509 (originally known as Series S 1 to S 8) with Norwegian names throughout. These names however including others that appeared only in the maps accompanying the 'Report of the Svalbard Commissioner' (Copenhagen and Oslo, 1927), were preliminary and some were in obvious need of amendment. For instance several names of ships, *Scotia* and *Phantom*, and at least one personal name, Flower, were translated.

In 1924 the Norwegian Government appointed a committee to decide the definitive form of the place-names of Svalbard. Four years later Norges Svalbard-og Ishavsundersökelser took over and expanded the work, entrusting it to a committee of philologists and Spitsbergen travellers. Fortunately this committee found that representatives of most expeditions of the last fifty years were still available and gave help in tracing the origin of names. Specially valuable was the help given by Baron G. de Geer, the author of many of the Swedish names. Very few names have baffled the compilers of the list.

More than ten thousand names have been dealt with, of which some three thousand three hundred are retained, about four hundred and fifty cannot be identified, and the rest are submerged. The list does not include names given after 1934, so that the names from Glen's expedition of 1935–36 are not entered. Accepted and discarded names are in a single vocabulary: accepted names in heavy type with location, details of origin, and synonyms, with their authors; discarded names in italics. One snag for the English user is that many entries are not under the proper or specific name but under the geographical or generic term if, in usage, this normally precedes the proper name. Thus

Cape, Kapp, Mount, Glacier, etc., appear under their initial letters and not under the name of the feature. Some of the mining settlements, of which many details are given, appear under Camp, but the larger ones, long called City (byen), are under their specific names. Altitudes are given above mean sea-level, and not as was a past practice, from mean high-water. The list includes submarine features around Svalbard.

All names are written according to landsmaal or nynorsk spelling, with the article added as a suffix. All geographical terms are translated. Bay and fjord and mount become bukta, vågen, fjorden, fjellet, etc., but fjorden has no particular reference to the physical history of the feature. Cape and headland are kapp, odden, neset, or huken, and so on. A few names sanction pleonasms, *e.g.* Glenmoredalen and Glenbegdalen, but Glen Watson becomes Watsondalen. Under the entry Spitsbergen it is made clear that the name applies to Vestspitsbergen, Nordaustlandet, Edgeöya, Barentsöya, and Prins Karls Forland, but not to Kvitöya (Giles Land), Kong Karls Land (Wiche Islands), Hopen (Hope Island), and Björnöya (Bear Island) which, with Spitsbergen, are included in the larger term of Svalbard.

While the names are given a Norwegian character it was decided not, except in special cases, to change them beyond recognition. Generally, but not always, the earliest name is accepted. Names that have been long used by Norwegians, *e.g.* Bell Sound, Wood Bay, are only translated as regards the geographical term sund or sundet and fjorden, respectively. Where "a place-name is ordinarily translated into the different foreign languages" it is translated into Norwegian, thus Kings Bay becomes Kongsfjorden, and Green Harbour becomes Grönfjorden. The principle underlying this decision is not easy to understand. Kings Bay has long been used by Norwegians, *e.g.* Kings Bay, Kulkompagni, and Icefjord, now Isfjorden, is surely well established. Conway's name of Sticky Keep remains, but his well-known Ivory Gate is disguised as Elfenbeinporten, Brent Pass is Brentskardet, but Windy Point becomes Vindodden. The retention however of well-known names is commendable. Storfjorden is better than the historically correct Wybe Janz Water, and Wijdefjorden than Sir Thomas Smith's Inlet, but we may question the substitution of Sorgfjorden for the earlier Treurenburg Bay, regret the use of Björnöya for Bear Island, and wonder why the long-used Low or Lowe Sound should go in favour of Van Mijenfjorden which, as Van Muyden, originally belonged to a bay outside this fjord where it is retained as Van Muydenbukta. Engelsbukta does not revert to its earlier title of Cove Comfortless.

Some names, owing to duplication, have been discarded. Thus Rubin Glacier on Wijdefjorden becomes Tryggvebreen to avoid confusion with Rubinbreen on Woodfjorden. Frithiofs Hamn on the Foreland becomes Levinhamna owing to there being an earlier Fridtjovhamna in Bellsund. Such changes are desirable, but not so the substitution of Ytterdalssåta for Conway's Berg and the nondescript Fuglehukfjellet for Mount Conway owing to the many features named for Conway. Might not the name of his barony, Allington, have been suitably used for one of these?

Apart from duplicates or alternatives a number of names have been discarded as superfluous or as not referring to "a geographical unit." Some of these rejections are wise: others may be questioned. G. de Geer had a passion for naming areas and regions. Several such as Bünsow Land, Dickson Land, Torell Land, Nathorst Land, Nordenskiöld Land, etc., remain and are useful, while his Heer Quarter, Culm Quarter, Skansen Quarter, Stockholm Quarter, Germania Quarter, and several others go without regret. But should Andrée Land be moved north from Isfjorden to a region with which Andrée had no

relations? Conway's Garwood Land, a useful name, is discarded. James I Land has been moved south to make place for Haakon VII Land and Albert I Land. Hoelshalvöya and de Geer's Gotlands Ryggen are termed unnecessary and so leave two prominent peninsulas unnamed. Bruce's Sidlaws and Coolins, referring to groups of hills on the Foreland, are also discarded as not being geographical units. Another rejection is Salisbury Crags. Several of the spurned names may find no place on the present small-scale maps but refer to features that will require names on more detailed larger scale maps.

Few names prominently associated with Spitsbergen exploration, either in Europe or in the field, are absent. We miss the names of J. W. Gregory and F. G. Binney, but note that H. W. Ahlmann enters the list by the substitution of his name for a duplicate, and that the three men most closely associated with the Norwegian mines are commemorated, J. M. Longyear, the American founder of the mine, Karl Bay, for long its director and the uncrowned "king" of Spitsbergen, and Einar Sverdrup, his successor. An honoured name in Spitsbergen survey was the Russian Chernishev, whose name is now hidden in the Norwegian version of Tsjernvsjovfjellet.

A few completely new names are introduced, apparently in order to commemorate men of prominence in Spitsbergen affairs. The western side of Torell Land is labelled Wedel Jarlsberg Land and Mount Temple is renamed Sindballefjellet. There are plenty of unnamed peaks that might have served these ends instead of this arbitrary action. A long series of peaks in Nathorst Land has been used in this way to record the names of each successive sysselman (governor) of Svalbard, Bassöe, Håvie, Ingstad, and Marlow.

Careful investigation has cleared up a few enigmas of the nomenclature. Hedgehogfjellet returns from Hornsund to its right place on Storfjorden and the confusion between Biskayerhuken and the adjoining point Jermackpynten is elucidated. But some findings are less happy. The colourless name of Kvitöya is applied to Giles Land, and Kong Karls Land, named without certainty for one or other King Karl, still disguises the Wiche Islands. Giles and Wiche are noted, respectively, as the earliest names, but are discarded. Klaas Billen Bay loses Klaas and becomes Billefjorden, the Stubendorff Mountains are disguised as Finnlandveggen, and Red Bay becomes Raudfjorden. The confusion between Daudmannsodden and Kapp Scania is settled by moving Kapp Scania to a point a few miles east of its synonym. The tangle of nomenclature in the names of Peter Winter Bay, Ferrier Haven, Bruce Bay, and Seahorse Bay (Selvågen) is unravelled satisfactorily. There is some inconsistency in the interpretation of old names that are accepted. Flathuken is taken to indicate the point, for the mountain behind it is called Flathukfjellet: Kvadehuken is a flat point but Gipshuken is removed from the obvious point or hook to the hill behind it on the assumption that the old Dutch meant the hill. This is far from convincing.

The name list reveals a few lighter touches. G. de Geer invented the name of Ferrier (Ferrierfjellet) to rhyme with Conway's Mount Terrier, beside which it stands, and Farwood (Farwoodtoppen) to contrast with Garwoodtoppen. Sinaiberget received its name because a Norwegian geologist whose nickname was Moses ascended the mountain and brought back some slabs of sandstone. The derelict English marble-quarrying settlement of a few huts on the north side of Kongsfjorden earned its name of London from the facetiousness of the Norwegians in their large coal-mining settlement across the fjord.

The list must have involved an enormous amount of work and has clearly been compiled with much careful research and it is noticeable that it was printed and published in the year 1942 at Oslo. Very few mistakes can be

found. Grampianfjella (Northern Grampians) was intended by Bruce to extend from Mount Helland to Mount Methuen. The rocks known as Ministerbreen are omitted. A. N. Skelton (Skeltonfjellet) was born in 1880 not 1850. Grüner Hafen, on p. 165, is wrongly spelled. Under Verlegenhuken, Woodfjorden should be Sorgfjorden. There seems to be some overlapping in the names of Hollendarneset and Smeerenburgodden. In the bibliography an omission is the map (G.S.G.S. 2877) in 'Treaty regulating the Status of Spitsbergen, etc.' Cmd. 2092, H.M.S.O., 1924, and the maps in 'Spitsbergen and Bear Island,' L. H. Gray, Washington Government Printing Office, 1919.

The bibliography and list of maps is full and most useful. There is also an index to the main expeditions. The map on a scale of 1 to 2,000,000 is a revised edition of the map which appeared in earlier numbers of the same series of publications.

The criticisms offered are largely matters of opinion and in no way detract from the recognition of this work as a scholarly contribution of outstanding importance to Spitsbergen cartography and history. At last there is a definitive version of every Svalbard place-name. R. N. RUDMOSE BROWN.

REVIEWS

EUROPE

TRAVEL IN ENGLAND from pilgrim and pack-horse to light car and plane. By THOMAS BURKE. *London: Batsford*, 1943. $8\frac{1}{2} \times 5\frac{1}{2}$ *inches; 154 pages; illustrations.* 10*s* 6*d*

Mr. Thomas Burke has read widely and well. His book comes at a time when touring is no longer possible and when by compulsion most would-be travellers have to sit still. It is therefore all the more pleasant to meet and discourse with such excellent travellers as Chaucer's Pilgrims, Piers Plowman, Kemp the morris-dancer, Leland, Harrison, and Drunken Barnaby, even with Falstaff himself (although he was too scared of being scoured to death with perpetual motion to be a great traveller), Pepys, Evelyn, and Celia Fiennes. There are some interesting records of the great coaching days and the story continues through the period of railways, when, to quote the Pasha in 'Eothen,' travel was " whiz ! whiz ! all by steam," down to modern times when locomotion seems to consist of perpetual throbbing noises in the sky and evil smells on the roads. But it is to the great company of leg-stretchers that one's thoughts turn as one reads this book. Not that walking for pleasure is an old English habit. Moritz, the German traveller of 1782, records that any person undertaking a journey on foot in England was looked upon as a vagabond to be suspected and shunned by all who met him. Mr. Burke quotes from several foreign travellers, but he might have included some more. There is much which foreigners did not see or understand, but they also saw much which the English either failed to observe or dismissed as unimportant. The illustrations are excellent, but not always identified. There is one picture of a Prehistoric Green Track which cries out for a name. It provides evidence that Mr. Burke, who has written much on streets and cities, is also a true lover of the English country-side. Perhaps, as such, he was anxious to keep this peaceful and secluded corner to himself M. L.

NORTH AMERICA

MIRROR FOR AMERICANS; likeness of the Eastern Seaboard, 1810. By RALPH H. BROWN. (Amer. Geogr. Society, Publication 27.) *New York: American Geographical Society*, 1943. 10×7½ *inches;* xxxii+312 *pages; illustrations and maps*

This book, admirably produced, and profusely and delightfully illustrated, is intended by the author as "a short cut to an understanding of American geography in 1810." As he says, the America of that period seems well worth knowing. Rapidly growing, with settlements already extending widely beyond the mountains, and at the same time still with extensive maritime interests, its republican constitution in successful operation and the tide of foreign immigration not yet set into its shores, with a population and revenue double that of 1790, under the wise leadership of three of its greatest men, Washington, Adams, and Jefferson, it had reached a stage of its history of singular interest and promise. Travellers from the Old World were offering their somewhat superficial descriptions of its life. Upon these, but more upon the information provided by writers at home, by physicians, clergymen, politicians, statesmen, merchants, and professors, who found opportunity to record what they knew of American geography, the author has drawn. He has investigated extensive collections at many libraries. The material thus collected is arranged in a descriptive narrative which deals successively with the "natural traits," population, ways of travel, occupations, maritime interests and trade, and the various regions of the country, the emphasis following, on the whole, that of the original records, and the style and organization "designed as composites of the geographical exposition of the time." Much valuable and well-chosen information is thus brought systematically together. The illustrations, including many maps and plans, pictures of settlement and of the processes of industry, are of the greatest interest. The literary form which the author has adopted is to put the story in the mouth of an imaginary character, Thomas Pownall Keystone, a gentleman of Philadelphia, who is supposed to have made a considerable collection of descriptive writings and to have decided at last to produce a synopsis of his materials in the form of a concise geographical view of the inhabited parts of Eastern America. Mr. Keystone shows a system and a critical judgment perhaps in advance of his age, but the composite pen which his creator puts in his hand denies him the enthusiasm and literary form which the living interests of a young nation might well have inspired in a writer with his ambition. There is a useful bibliography of contemporary works presumed to have been in his library, and the author's critical notes indicate the principal sources of his compilation and bring our knowledge of the literature of the subject up to date. E. A. B.

CENTRAL AND SOUTH AMERICA

WEST INDIAN SUMMER: a retrospect. By JAMES POPE-HENNESSY. *London: Batsford*, 1943. 8½×5½ *inches; illustrations.* 12*s* 6*d*

Mr. James Pope-Hennessy's "retrospect" of the West Indies is calculated to appeal to readers who like the "Hiawatha Retold" class of literature. It will disappoint those who prefer direct to secondary evidence. It may be conceded that it was a happy thought to assemble extracts from the works of bygone visitors to the West Indies to form a composite picture of the past, but the compiler might have allowed those travellers to tell their tales in their own words instead of through the medium of a somewhat anaemic young gentleman called

Cashel, who held the office of aide-de-camp to the Governor of Trinidad in the summer of 1939. Cashel feels commonly "folorn and unmischievous" in his surroundings. He hates "answering the telephone and ordering the car." He dislikes "the pompous cars, the rigid tenour of official life." There are moments when he even feels "suddenly unable to throw cold glances of dislike at the palm-trees." Although Mr. Pope-Hennessy uses Cashel as a *compère* to introduce the more robust figures of the past—who include Robert Dudley, Raleigh, Hans Sloane, Trollope, Froude, and Kingsley—he is at pains to explain that the central figure of the book is not intended to be himself, and that "the modern episodes and the contemporary judgements they contain are not altogether authentic nor wholly true." He does not explain however why he has chosen an intermediary whose peculiarity is that he brings his players on in an arbitrary sequence which places Trollope in front of Dudley and Sloane after Froude. They are a mixed company, and include some, such as John Waller, the naval surgeon, and Mrs. Carmichael, "the Lady of Laurel Hill," who deserved to be rescued from the obscurity into which they have fallen; but there are others, like the genial Père Labat and the loquacious Lady Nugent, who might well take umbrage at not having been bidden to appear in Mr. Pope-Hennessy's cavalcade.

O. R.

POLAR REGIONS

BRITISH POLAR EXPLORERS. By Admiral Sir EDWARD EVANS. *London: Wm. Collins*, 1943. 9×6½ *inches; 48 pages; illustrations. 4s 6d*

Admiral Evans has written a characteristically racy and attractive book which makes a most welcome addition to the Britain in Picture series. To write in a slender volume of British exploratory enterprise in both the Arctic and the Antarctic was a big order, and Admiral Evans immediately sensed his difficulty. The record of Polar Exploration has been, apart from the fine journeys of Norwegians and of Peary and Byrd in these latter days, almost exclusively a British affair, and at the most he says eight names only could be included in a book of this length. Two books could well have been written, but given eight names, what is the selection to be? The author gently disarms criticism, and chooses Frobisher, Davis, Hudson, Franklin, Cook as a "golden link," Ross, Scott, Shackleton, and Mawson—an admirable selection. Admiral Evans has his other favourites as well, many of whom he contrives to mention in passing.

Each of the selected eight has his explorations described briskly and vividly, and the result in each case is a successful picture of the man himself. There is a fine description of John Davis and his expedition, whom Admiral Evans likens in many ways to Captain Scott, and a moving account of the author's farewell to Scott's party on the last lap to the South Pole. Shackleton's moments of greatness are described with vigour and admiration. These are three notable pages, but there are many others with equally striking passages. A careful reader may perhaps detect some errors. In my own case I felt that the Hudson account was unusual. Abakuk Prickett's narrative is apparently accepted, but it is well known that he confined his accusations as instigators of mutiny to those, such as Green and Juet, who had been killed on the voyage home. Dead men tell no tales, but Luke Foxe, writing only a few years later, made the suggestive remark, "Well, Pricket, I am in great doubt of thy fidelity to Master Hudson." In a book such as this small errors are not perhaps important, for the main thing is the general picture, and also the stimulus from reading about men of action by one who has himself given an example of the fine qualities which he finds in his forerunners.

The book, like others of this well-known series, is admirably produced. As a whole the Arctic pictures outdistance those from the Antarctic, the result no doubt of the dependence to-day on photographs. Wilson's water-colour of Hut Point is a notable exception. First place however must be given to the splendid colour reproduction of Frobisher from the Bodleian.

I have read this book with such interest that I am tempted as an afterthought to try and make a choice not merely of a British eight for Arctic and Antarctic combined, but of a separate eight for each Pole. It is far from easy, and probably no two Polar men will agree. For the Antarctic my choice would be Cook, who set out to disprove an Antarctic continent, William Smith of Blyth, and Edward Bransfield, who first discovered the continent, Weddell, justly honoured by his sea, James Clark Ross, and Scott, Shackleton, and Mawson. These are the eight, and I hope Dr. Mill will agree, but I know there are others with almost equal claims. The Arctic is still more difficult, but Willoughby, Frobisher, Davis, Hudson, Baffin, Franklin, Parry, McLintock would probably be the choice. Names are innumerable by reason of the great press of British naval men and whalers; and the list must exclude some very great names: Simpson and Rae both of the Hudson's Bay Company, Collinson, to whom credit for a North-West Passage is due, Scoresby, and, in our time, Watkins. I particularly include McLintock, whose development of travel by dog-sledge, culminating in his discovery of Franklin's fate in 1859, was as modern and effective as anything done to-day. J. M. W.

PHYSICAL AND BIOLOGICAL GEOGRAPHY

WEATHER STUDY. By DAVID BRUNT. (Nelson's Aeroscience Manuals.) *London: Thomas Nelson*, 1942. $7\frac{1}{2} \times 5\frac{1}{2}$ *inches;* 216 *pages; diagrams and maps.* 5*s*

CLOUD READING FOR PILOTS. By A. C. DOUGLAS. *London: John Murray*, 1943. $8\frac{1}{2} \times 5\frac{1}{2}$ *inches;* x+120 *pages; illustrations and diagrams.* 10*s*

Sixteen years ago Professor Brunt wrote a little volume in the *Oxford World Manuals*, entitled 'Meteorology,' which has been held in esteem as a simple and authoritative exposition of the subject in its physical and synoptic aspects. It is indeed an excellent introduction for a reader not deeply instructed in mathematics and physics. For from that book, despite its brevity and its non-technical style, a firm understanding can be gained of physical processes at work in the atmosphere, in ignorance of which it is impossible to comprehend the weather. The same principles infuse the present work, which might be described as an enlarged and reconstructed edifice on the same site and in similar style. Nearly half the book is devoted to the elementary physics of the atmosphere. The laws of radiation, of adiabatic changes, of the transformations of water vapour; the theory of the relation of wind to pressure distribution, both near the surface and in the upper air; and an explanation of diurnal changes in the atmospheric elements all receive brief yet adequate exposition. Yet in spite of this range of subject-matter, it is certain that a careful student will make good progress towards an understanding of the chief atmospheric processes and their interrelationships. Synoptic Meteorology is the province of the remaining chapters, wherein are described not only the chief instruments employed in weather observation and some of the reporting codes (for wireless or telegraphic transmission), but also the terrestrial circulation, with the chief pressure types and their associated weather.

In the Introduction a modest and just claim is made that the work may be particularly useful to Air Force cadets and to students of Geography. It will

also certainly be welcome to pilots and navigators, especially those under-going advanced courses of instruction. Moreover it is not to be despised by professional meteorologists, who, although possessed of more advanced knowledge, may herein capture the essence of the art of rendering the recondite into ordinary speech. For in the extremely simple, straightforward wording may be discerned the authentic touch of a master's hand.

'Cloud reading for pilots' is a valuable contribution to this branch of meteorology. The 'International Atlas of Clouds,' and sections of standard text-books derived therefrom, are concerned chiefly with description and classification. But here clouds are portrayed, in nearly two hundred photographs, as visible manifestations of the atmosphere at work. As is stressed in the Foreword, ability to read the state of the sky is an indispensable aid to forecasting and to the interpretation of forecasts. Here is a book which will help many to unravel the cloud enigma. Especially to be commended is the long fourth chapter on Convection Clouds, which will be of utmost utility to glider pilots. But it is not to be approached by beginners, who will scarcely find its perusal profitable. This is partly due to omission, in the notes and explanations, of all reference to air masses (notwithstanding the title of Chapter 3) and generally to the synoptic situation corresponding to each photograph or series of photographs. Those with a sound knowledge of meteorology will be able to supply this essential context; for others, there will be the pleasure of admiring the more spectacular photographs of cirrus, altocumulus, and massive convection cloud. J. H. G. L.

ECONOMIC AND HISTORICAL GEOGRAPHY

MINUTES OF THE HUDSON'S BAY COMPANY 1671–74. Edited by E. E. Rich. With an Introduction by Sir John Clapham. Hudson's Bay Record Society, vol. V. *London: Hudson's Bay Record Society*, 1942. 10×7 *inches;* lxviii+276 *pages*

The material published in this volume comprises the earliest documents for the history of the Hudson's Bay Company, for in addition to the Minutes, which form the bulk of the book, the Appendix includes the Charter of 1670 and the ledger accounts of the first adventurers and of the ships' captains on the voyages of 1668–74. The series of minutes is not complete, beginning some eighteen months after the granting of the charter, and there are some gaps, but they afford a fairly detailed account of the organization and results of the early enterprizes. Sir John Clapham's valuable introduction relates the Company's activities to the economic history of the times, extracting all the evidence the documents will yield, and constructing from it a coherent and pungently written commentary.

The Company was a private venture, financed by the court and the city. The profits of each voyage were not divided, the members being prepared to wait for a return on their investments. In fact no dividends were paid for fourteen years, though in keeping with the practice of the times there were pickings for the shareholders from commissions, debentures, and the judicious unloading of shares. The purpose of the Company was clear: there was no thought of a colony of settlement, the aim was the prized beaver skins, for which guns, shot, and powder were the chief barter. From the first a main preoccupation of the Company was the prevention of private barter by the officials and crews, and search was frequently ordered for skins that "may bee hid under ye fathom wood or Ballast or anywhere else in the Shippe." Eventually the Company was obliged to tolerate this traffic provided it was kept within reasonable limits.

The volume has been adequately edited; the general reader however will miss any reference in the introduction to the situation of the trading posts established. For this he must turn to the biographical sketches in the Appendix, and piece together the course of events in the Bay for himself. A small sketch-map, at least, would have been helpful. G. R. C.

GENERAL

ONLY AN OCEAN BETWEEN. By LELLA SECOR FLORENCE. (America and Britain Series.) *London: G. G. Harrap*, 1943. 9×6½ *inches; 64 pages; illustrations and diagrams.* 6*s*

This is a pleasant book to "tell you things you want to know about Britain and America": written in a lively, uneven style, sometimes picturesquely crisp, and then most leisurely diffuse. It has sixteen good pairs of comparative photographs: Niagara Falls opposite those of Fingle Bridge on the Teign; Rockefeller Center facing Parliament Square. But it has also eighteen Pictorial Charts designed by the Isotype Institute, which at great expense tell one less than might have been thought possible. Plate 4 takes a whole page and five colours to say this of our weather:

	London	*New York*
Days with rain	150	120
without rain	210	240
Relative total rainfall	5	9
Maximum temperature	86° F.	102° F.
Minimum temperature	12° F.	−14° F.

Plate 14 takes two whole pages to show simple rough figures for the World's Merchant Marine in 1914 and 1939 which might have been given more accurately in four lines of print. It is depressing to be thought incapable of understanding what 450,000,000 means, and be confronted on Plate 8 with a row of fifteen yellow figures each supposed to represent thirty million Chinese: a row running across two pages, which has to be counted laboriously because the dummies are not arranged in groups of three or five. It is surprising to learn from the map of Great Britain on Plate 1 that there is a railway right to the Land's End but not to Oxford or Cambridge, and it is infuriating to see print and paper wasted as in Plate 10: "Altitude and vegetation Great Britain," where "the mountains of Scotland are clothed in fir-trees," printed scarlet, and the grains of wheat are taller than the mountains. These pictorial charts are sadly out of keeping with the rest of the book.

THE MONTHLY RECORD

ATLAS OF THE TANGANYIKA TERRITORY

One of the best ways of showing a country's achievements and possibilities is the publication of a national atlas; and it is moreover a sign of the country's vitality and lively faith in its future. An atlas of Tanganyika recently received from the Chief Surveyor of the Territory fulfills these purposes admirably. That it has been produced, and so well produced, in the fourth year of the war, and in an isolated African dependency is much to the credit of all concerned: to the Chief Surveyor and his staff, who, it may safely be assumed, were until recently taking an active part in the Italian East African campaign; to the Government Printer at Dar-es-Salaam; and to the local Government which has given the project its countenance.

The greater part of the atlas is comprised of some eighteen maps of the Territory on a polyconic projection. For the most part a common lightly printed base plate, about 13 inches square, has been used and, by means of overprints, various aspects of the Territory's physical conditions, biogeography, human geography, and industry and commerce, are shown. Within a scale of about 63 miles to an inch (1 : 4,000,000) the maps can present only a generalized view; any more ambitious aim would convey a spurious impression of accuracy, particularly where such constantly changing features as the distribution of medical and educational facilities or of tsetse fly are pictured. The best use has been made of colours which are pleasing and well contrasted, while registration is, in general, good.

A series of historical maps emphasizes how recently eastern Africa has become known to Europe. Some are familiar maps, frequently reproduced, and the present reproductions suffer by being copies of copies.

The list of names seems to be confined to places appearing on the general map of the Territory included in the atlas. As a result one misses such well-known names as Serengeti and Usambara; as well as a number made familiar by the German East Africa campaign of 1914–18. It is pleasing to note the consistency which already characterizes the orthography, thanks perhaps to the work of the P.C.G.N., whose First List of Tanganyika Names appeared in 1922. A comparison of this list of about five hundred names with the present atlas list of over one thousand names affords an interesting commentary on the multiplicity of place-names in tropical Africa, and perhaps on the instability of African settlement for only about one in ten of the names in the latter appear in the earlier list. A few variations in spelling, some of them perhaps not really necessary, have crept in. Rubafu is probably Rubabu; while Grummetti with two double consonants seems to be a rogue.

A note on the cartographical history of the Territory is included, but neither this nor any of the maps gives an indication of the present state of the topographical mapping of the country. Indeed it may be remarked of most of the maps that, since the information given is inevitably in a compressed form, some clue as to where more detailed knowledge may be sought would enhance their value. It is almost unbelievable how difficult it is at the heart of the Empire, to come upon succint and recent information regarding the British colonial dependencies. The difficulty has been increased of late years, for the development overseas of well-equipped map-printing establishments and printing presses has resulted in more and more local publication, much of which is virtually unobtainable, and even unknown, outside the place of publication.

There is a real need for a central institution in London to acquire and to

maintain everything published in or about the various territories. Are there in England to-day, let us say, copies of the large-scale topographical maps of the Arusha-Moshi settled area; or of the sheets of the most recent town-plan of greater Nairobi? Perhaps the war-time experience of service departments groping for information may provoke some concerted measures for putting an end to a not very worthy state of affairs. H. B. T.

THE PHYSIOGRAPHY OF EAST ANGLIA

In his presidential address to the Norfolk and Norwich Naturalists' Society, published in their *Transactions* for 1941, Mr. Steers reviewed most aspects of the physiography of East Anglia. Little detail is given on any one subject, but much up-to-date information, some unpublished, is conveniently brought together and many important gaps in our knowledge of the area are clearly revealed.

The underlying chalk and tertiary deposits affect the relief only slightly. The present scenery originated mainly with the glacial deposits, and with the changes of level which led to the formation and subsequent drowning of the lower river valleys. Solomon's interpretation of the glacial deposits of the north and east coastal regions can be compared with Paterson's different sequence for the Breckland. The age of the river valleys is illustrated by the fact that they are cut into the Red, Norwich, and Chillesford Crags, but contain upper glacial deposits. Ice-modified spurs in the Stour valley, buried channels in the East Suffolk valleys, and ice-contact slopes, still remarkably fresh, in the Granta valley near Linton, all testify to the action of glaciers in the area. Hazeltine Warren's early work and Godwin's more recent contributions add much to our knowledge of movements of the land relative to the sea, and of their effects on the coastal regions, while just before the war a promising start was made by Godwin and others on the surprisingly neglected problem of the Broads. As is natural from its intrinsic merits as well as from Mr. Steers' own inclinations, the coastline is given somewhat more extended treatment. The paper finally refers to the Breckland, an area singled out both because of its natural beauty and its physiographical significance. It concludes with a reference to the Breckland meres, local features of seeming academic interest only, but which might yet achieve fame owing to their kinship with the Carolina Bays, the subject of a recent study by D. W. Johnson, and reviewed in the August number of this *Journal*. W. V. L.

POLISH SCIENCE AND LEARNING

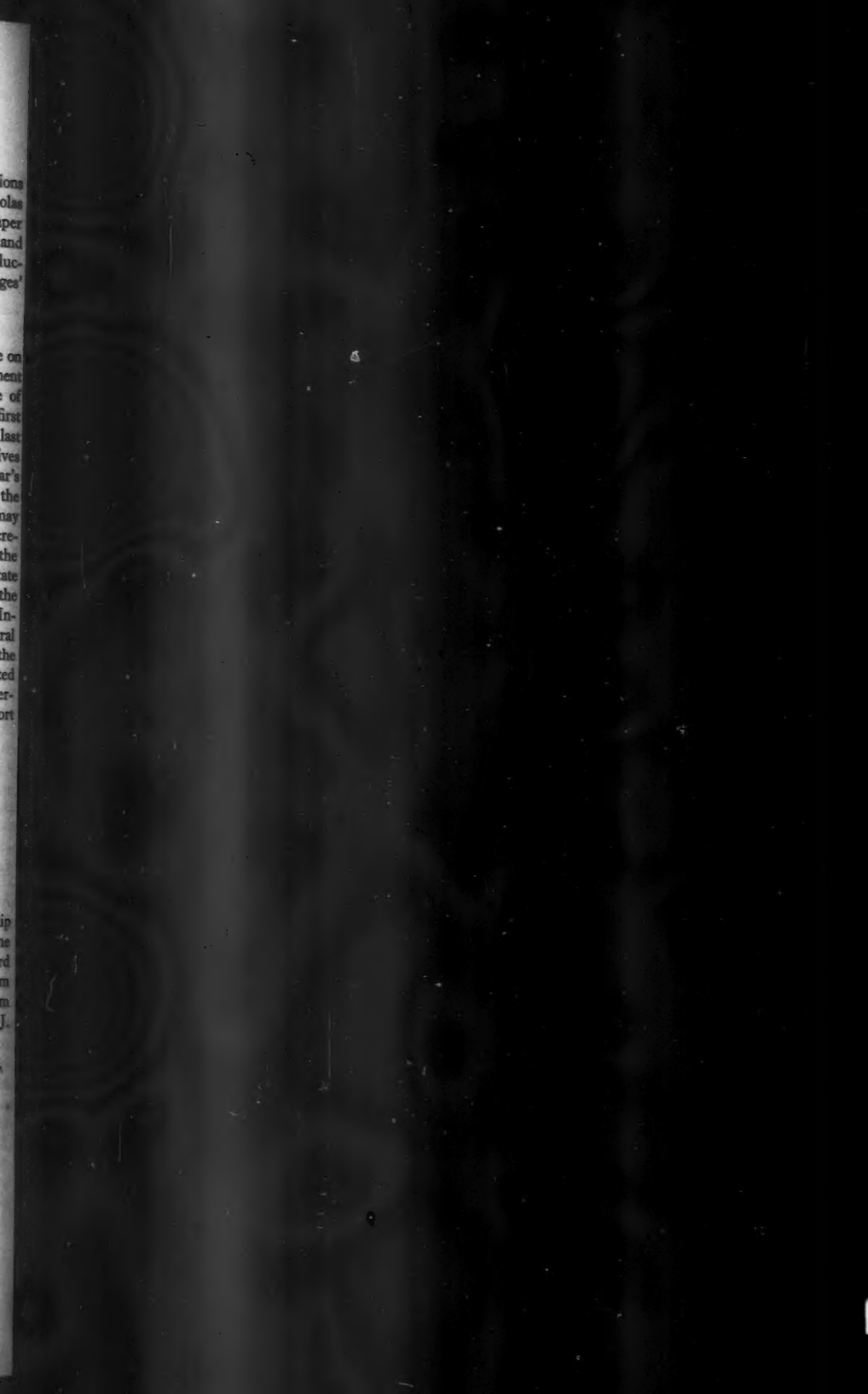
We have received from the Oxford University Press, the first three numbers of *Polish Science and Learning*, edited by the Association of Polish University Professors and Lecturers in Great Britain. The aim of this periodical is to preserve the continuity in difficult times of Polish culture, and to encourage the discussion of plans for future reconstruction of national life. The articles cover a wide variety of subjects, and assist readers in appreciating Poland's contribution to European civilization. Among them are several of geographical interest. H. Herbich emphasizes the importance of inland waterways for the country's future economic development, and gives brief details of the three principal routes it is proposed to develop; from the Vistula to the Danube via the Oder; the Bug–Prypeć–Dnepr; and the San–Dnestr–Prut; to complete a great European system. The mineral resources are discussed by an anonymous writer, who indicates the results of recent geological explorations. The main deficiency is a lack of high-grade iron ore, and of any proved oil fields to replace the rapidly declining Borysław field. A summary account is given of the work

of Benedict Dybowski, the naturalist and explorer, who laid the foundations of our knowledge of Lake Baikal. The third number, dedicated to Nicholas Copernicus on the four-hundredth anniversary of his death, includes a paper by H. Kucharzyk on the introduction of the Copernician theories into England through Robert Recorde's 'Castle of knowledge,' 1556, John Dee's introduction to John Field's 'Ephemeris Anni 1557 currentis . . .', and Thomas Digges' 'Perfit description of the caelestiall orbes,' 1576.

SCIENTIFIC RESEARCH IN BRITISH COLONIES

The Colonial Research Committee was appointed in April 1942 to advise on the expenditure of half a million a year provided by the Colonial Development and Welfare Act of 1940 and to assist in coordinating the whole range of research in colonial studies, irrespective of the provenance of funds. Its first Progress Report for 1942–43 was presented to Parliament in November last and is now published by H.M. Stationery Office, Cmd. 6486, price 6*d*. It gives a clear account of the history and functions of the Committee, its first year's work, a survey of special problems such as shortage of technical staff, the isolation of workers, the need for central organization. Research schemes may be submitted by Colonial Governments, by Advisory Committees to the Secretary of State, or by research institutes or Universities in this country or in the Colonies. Ten research schemes had been approved by the Secretary of State before the Committee was set up; ten more on the recommendation of the Committee. An Appendix gives details of fifteen Colonial Agricultural Institutes, nineteen Medical Research Institutes in the Colonies and five Central Institutes in this country. Lastly, Appendix IV gives the addresses of the Executive Council, three Imperial Institutes, and eleven Bureaux, supported jointly by all countries of the British Commonwealth for collection and interchange of scientific information on agriculture and medicine. This first report makes encouraging reading.

ELECTIONS

The following have been elected Fellows of the Society:

On 20 September 1943: Philip Eastwood Carlton; Lieut.-Colonel Philip Catt; Captain Harold William Foster; Jagdish Singh Gahlot; Miss Jane Hughes-Martin; Major Cedric Rudolph Janvrin; Captain Arthur Edward Jones; Captain Harry Luscombe, R.C.E.; Dr. James McIntyre; Suppramaniam Mahadeva; Eyo Nkune; Joseph Lloyd Hughes Owens; Rev. George William Plasting, D.D.; C. I. Ramirez; Miss Beatrice Saward, B.SC.; Lieut. Norman J. Suckling, R.E.; Miss Majorie Mary Sweeting; Guy Tatum